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IMPROVING CONSTRUCTION INDUSTRY PERFORMANCE: ISSUES AND OPPORTUNITIES*

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*The views expressed in this paper are those of the authors and do not necessarily reflect the views of the Secretariat of the United Nations Industrial Development Organization (UNIDO). Mention of firm names and commercial products does not imply the endorsement of UNIDO. This document has not been edited.

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TABLE 1
CONSTRUCTION COMPONENT OF GROSS DOMESTIC PRODUCT AND EMPLOYMENT
PERCENT OF GDP AND TOTAL EMPLOYMENT

OECD COUNTRIES	CONSTRUCTION ACTIVITY PERCENT OF GDP		CONSTRUCTION EMPLOYMENT PERCENT OF TOTAL EMPLOYMENT	
	1981	1985	1981	1985
Canada	7	6	6	5
United States	5	5	6	7
United Kingdom	5	5	6	6
Sweden	7	6	7	6
Japan	9	7	10	9
France	7	5	8	7
Germany	7	5	8	7
LATIN AMERICAN COUNTRIES				
Bolivia	4	6	5	3
Brazil	8	6	8	6
Chile	5	4	5	4
Colombia	5	7	6	6
Costa Rica	6	4	7	5
Honduras	6	5	6	5
Nicaragua	3	5	6	5
Peru	6	6	5	6
Uruguay	6	8	5	4
Venezuela	5	2	9	7

Sources: International Labor Organization, Yearbook of Labor Statistics, 1991
United Nations, National Accounts Statistics, 1988-89

TABLE 2
VALUE ADDED IN THE CONSTRUCTION INDUSTRY

COUNTRY	YEAR	VALUE ADDED		PERCENTAGE OF GROSS DOMESTIC FIXED CAPITAL FORMATION
		PERCENTAGE OF GDP	MILLIONS OF DOLLARS	
Canada	1984	4.2	\$13,929	23.0
	1984	5.6	27,568	29.8
	1985	5.0	31,172	25.5
	1985	7.3	96,961	25.7
	1985	4.7	184,279	24.3
United States	1982	4.9	13,861	23.0
	1983	5.1	1,951	30.0
	1983	5.1	7,313	29.5
	1983	3.1	545	19.2
	1985	3.0	1,486	19.4

Sources: International Labor Organization, Yearbook of Labor Statistics, 1987
United Nations, National Accounts Statistics: Main Aggregates and Detailed Table, 1985

and services [Hillebrandt, 1985]. Finally, the government's role impacts construction at both the microeconomic level as a consumer or executor of works, and at the macroeconomic level in its ability to distort market forces through policy making [World Bank, 1984].

While construction may differ from other industrial sectors on these counts, it remains highly linked to them, especially manufacturing. Extensive backward linkages exist to suppliers for a vast array of materials and equipment, whose economic value often exceeds the value added by the construction sector itself [Moavenzadeh, 1987]. Manufacturing is also a key demander of the construction industry's produced factories and warehouses. Construction's importance to economic growth is critical, providing the buildings and the infrastructure to support social and economic activities. As decision-makers and policy analysts deepen their understanding of the construction industry and its function in the national economy, they will be better equipped to facilitate its role in providing directly for human needs, stimulating investment, and generating employment [Moavenzadeh, 1987].

AN OVERVIEW OF THE U.S. CONSTRUCTION INDUSTRY

In the U.S., construction activity is carried out within a complex network of disciplines and firms shifting over time and place. Each of the major players -- architects, engineers, builders, suppliers - typically work independently of each other and often for separate firms. Actual production is undertaken on-site, not in the factory, with seasonal fluctuations. Additionally, these seasonal and geographic fluctuations of production force contractors to rely on a floating pool of labor [Moavenzadeh, 1987]. The product, on the other hand, is immobile, long lasting, relatively expensive, and time consuming to produce. The participation of investors, subcontractors, equipment and material suppliers, users and regulating government agencies only complicates the construction process further. The result is an industry where relationships are intense but temporary, competition formidable, and production highly sensitive to economic conditions.

The construction industry in the U.S. is highly fragmented with a large number of firms performing specific parts of production. There aren't any giants like in the auto industry or computers and most lack any vertical integration (design, organization, implementation) or even horizontal integration (electrical, carpentry, plumbing). For example, the National Association of Home Builders (NAHB) reported that the largest homebuilders in

the nation in 1989 accounted for less than one percent of total housing starts.¹

Structure and Organization of the U.S. Construction Industry

In the United States, as of 1987, there were approximately 544,000 construction establishments with at least one person on the payroll (see Table 3). Of this amount about 120,000 firms are merchant builders or contractors specializing in residential construction. Nearly 40,000 establishments (38,351) specialize in the construction of nonresidential buildings. Another 37,000 establishments are engaged in heavy construction, building pipelines and refineries, civic works and infrastructure. All these firms draw on the resources of 340,000 specialized contractor firms (plumbers, electricians, masons, painters, etc.).

In addition to the approximately 120,000 residential building establishments operating in 1987 with payrolls, there were 285,000 establishments operating without payrolls (see Table 4). Business receipts for firms with payrolls averaged \$931,971 per firm compared to \$95,380 for those without payroll. Of all the general contractors and operative builders with payroll in the construction industry, three-quarters were primarily engaged in residential construction (see Table 3).

Over the period from 1977 to 1987, construction establishments increased by 13 percent, adding 64,000 new firms with payrolls. Most of the growth, over 85 percent was the result of new specialized trade contractors. Residential builders declined from the late 1970s through the 1980s and are again in steep decline. Over the next ten years, NAHB expects a significant increase in the number of special trade contractors, but not in the number of home builders.

Value of Construction Put In Place

In 1987, the total value of construction put in place was \$329 million. Of this amount \$262 million was associated with the construction of buildings-- representing nearly 80 percent of the total value of construction put in place. Residential buildings (including hotels and motels) accounted for nearly half of building construction activity-- 47.8 percent. Office, commercial and industrial and warehouse buildings comprise 40 percent of the output. The remaining 12 percent reflects institutional and miscellaneous buildings. In the area of non-building construc-

1. Gopal Ahluwalia, Director of Research, National Association of Home Builders (NAHB), provided much of the data on the structure of the housing industry from reports generated using the U.S. Census of Construction and NAHB surveys of their membership.

TABLE 3

NUMBER OF ESTABLISHMENTS WITH PAYROLL
ENGAGED IN RESIDENTIAL CONSTRUCTION

	1977	1982	1987
RESIDENTIAL BUILDERS	129,245	93,632	119,287
INDUSTRIAL BUILDINGS & WAREHOUSES	8,259	7,435	7,014
NONRESIDENTIAL	18,467	22,112	31,337
SUBTOTAL GENERAL BUILDING CONTRACTOR AND OPERATIVE BUILDERS	155,971	123,179	157,638
HEAVY CONSTRUCTION	31,296	28,187	36,599
PLUMBING, HEATING, A/C	56,435	60,243	69,556
PAINTING, PAPER HANGING & DECOR.	27,369	24,779	29,867
ELECTRICAL WORK	36,764	39,563	49,436
MASONRY, PLASTERING, & TILE	45,451	40,460	46,182
CARPENTRY AND FLOORING	33,357	37,438	44,183
ROOFING AND SHEET METAL	20,577	21,152	25,673
CONCRETE WORK	16,974	19,986	23,422
WATER WELL DRILLING	4,305	3,551	3,414
MISC. SPECIAL TRADE	46,442	52,238	50,290
SUBTOTAL SPECIAL TRADE CONTRACTORS	287,674	299,410	342,023
SUBDIVIDERS AND DEVELOPERS	5,078	5,925	7,955
TOTAL	480,019	456,701	544,215

Source: National Association of Home Builders, 1990

TABLE 4

RESIDENTIAL BUILDERS WITH PAYROLL, 1987

	Establishments With Payroll	Establishments Without Payroll	Total
General Contractors			
- Residential Builders	98,521	266,074	364,595
Operative Builders	20,766	19,411	40,177
TOTAL	119,287	285,485	404,772
Average Value of Business Receipts by Establishment	\$931,971	\$95,380	

Source: National Association of Home Builders, 1990

tion, highways, streets, parking and bridges account for nearly 40 percent of activity. Water and sewer systems and treatment facilities account for 23 percent of non-building construction.

In 1982, roughly 70 percent of all construction activity was for buildings. Residential construction accounted for 35 percent of building construction. Office, commercial and industrial and warehouse buildings comprised 50 percent of the 1982 output. The remaining 15 percent reflects institutional and miscellaneous buildings. In the area of non-building construction, highways, streets, parking and bridges accounted for nearly 31 percent of activity. Water and sewer systems and treatment facilities account for 30 percent of non-building construction. Figures 1 and 2 illustrate the distribution of construction activities by type of construction for 1982 and 1987.

Characteristics of Establishments

Unlike other industries, there is little concentration of economic output in the construction industry. Today as well as in the past, construction is highly fragmented. Table 5 shows the distribution of establishments by dollar volume of business done. In 1987, over 54 percent of all construction establishments had gross receipts below \$250,000. Only 7,005 firms had receipts in excess of \$10,000,000, accounting for 1.3 percent of total employment. Firms grossing less than \$250,000 in 1987 accounted for 6 percent of total construction industry receipts. On the other hand firms with receipts over \$10,000,000 accounted for nearly 40 percent of total industry receipts in 1987. In 1986, the four largest construction firms (Bechtel, M.W. Kellogg, Parsons and Fluor) had foreign and domestic contract awards totaling \$26.5 billion, representing about 5 percent of total 1987 construction receipts [United Nations Center on Transnational Corporations, 1989].

Residential construction activities are even more fragmented. As Figure 3 illustrates, in 1987, 75 percent of residential builder firms built 25 or fewer houses. Medium sized builders (building between 25 to 100 units per year) account for 16 percent of all firms. Large-scale builders (annually producing over 100 units) account for 9 percent of all builder establishments.

Over time, the size of builders has been shifting to smaller firms. In 1969, 58 percent of homebuilders built less than 25 units. By 1987 the percentage had increased to 75 percent. Medium builders (25-100 units) fell from 30 percent in 1969 to 16 percent in 1987. Large builders, those producing over 100 units per year declined from 12 percent to 9 percent of NAHB membership (see Figure 3 for 1987).

Figure 4 illustrates the market share of residential builders by size of establishment. Small firms account for 13 percent of housing starts. Medium firms account for 20 percent of produc-

FIGURE 1

DISTRIBUTION OF CONSTRUCTION BY TYPE OF CONSTRUCTION

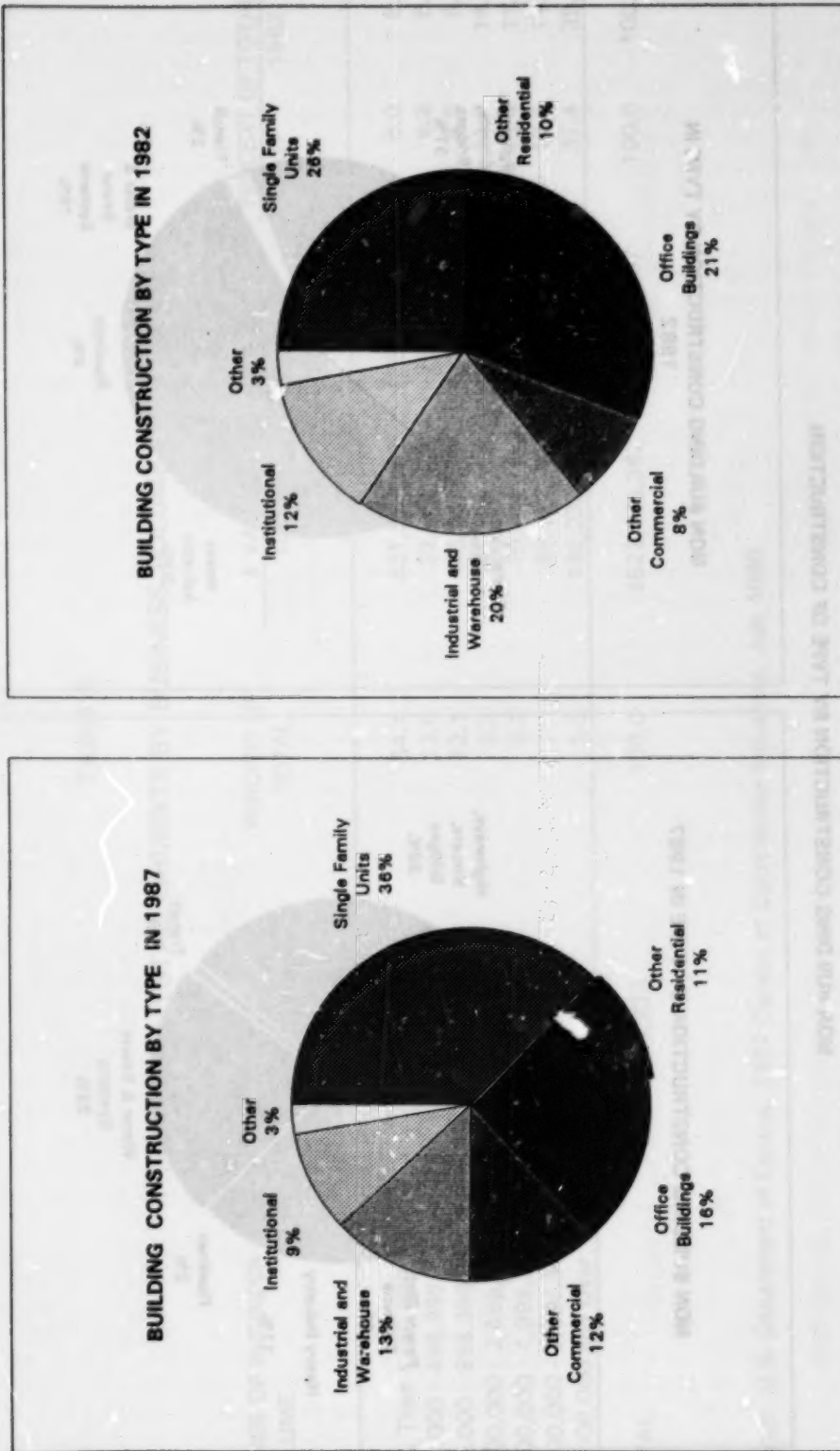


FIGURE 2

NON BUILDING CONSTRUCTION BY TYPE OF CONSTRUCTION

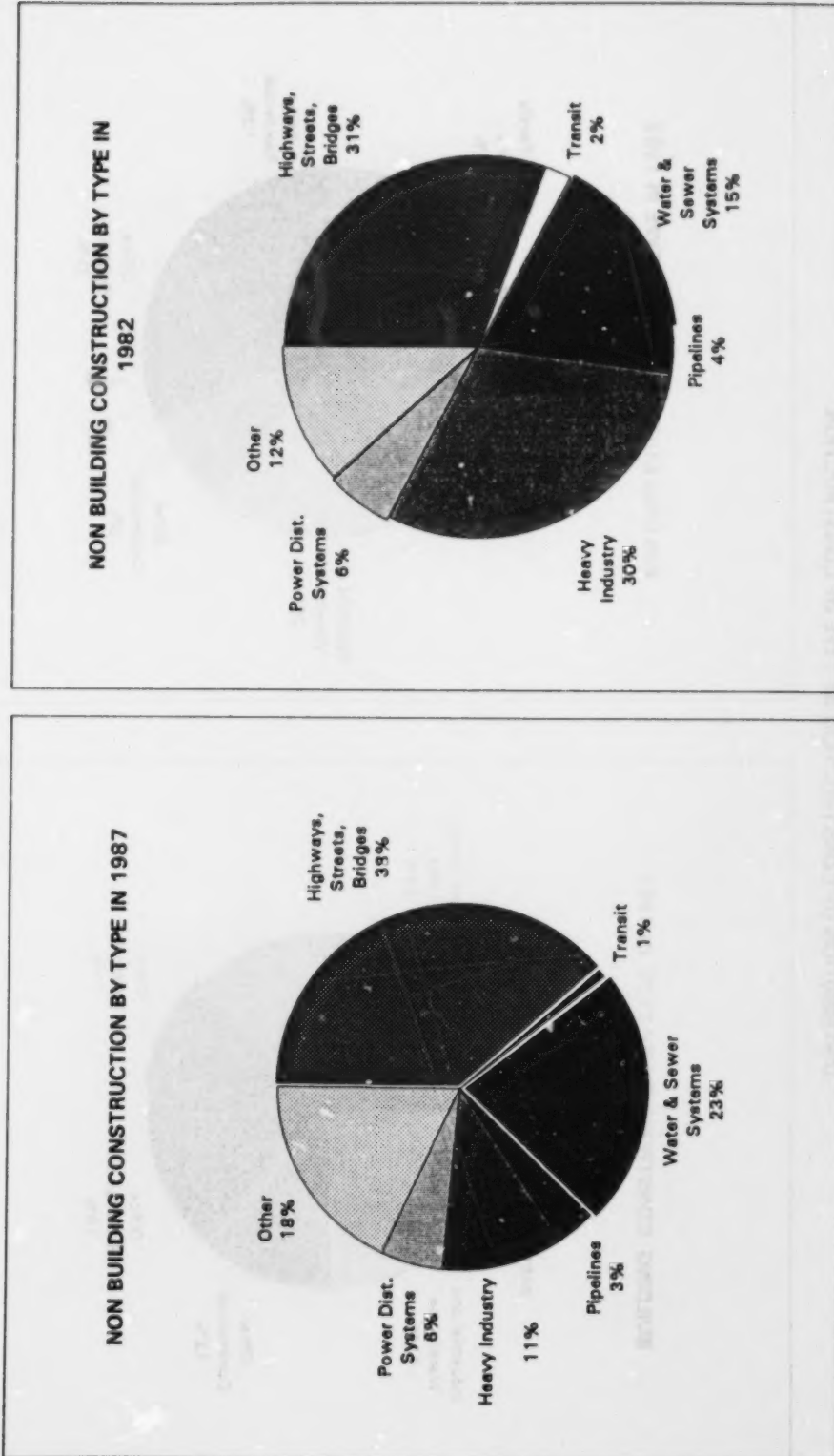


TABLE 5
ESTABLISHMENTS BY BUSINESS VOLUME

RANGE OF BUSINESS VOLUME	ESTABLISHMENTS 1987	PERCENT OF TOTAL	\$ VALUE OF BUSINESS (000)		PERCENT OF TOTAL	
			1987	1982	1987	1982
Less Than \$250,000	296,328	54.4	\$31,529,892	\$26,052,428	6.0	8.3
250,000 - 499,999	92,359	17.0	32,485,396	21,330,428	6.2	6.8
500,000 - 999,999	65,772	12.1	46,047,972	27,882,464	8.8	8.9
1,000,000 - 2,499,999	52,920	9.7	81,785,070	43,725,112	15.7	14.0
2,500,000 - 4,999,999	20,353	3.7	70,204,161	36,203,324	13.4	11.6
5,000,000 - 9,999,999	9,496	1.7	65,082,781	35,541,475	12.5	11.4
10,000,000 and Over	7,005	1.3	195,330,090	121,442,926	37.4	38.9
TOTAL	544,233	100.0	\$522,465,362	\$312,178,157	100.0	100.0

Source: U.S. Department of Census, 1987 Census of Construction Industries, July 1990.

FIGURE 3
BUILDERS BY SIZE OF ESTABLISHMENT - 1987

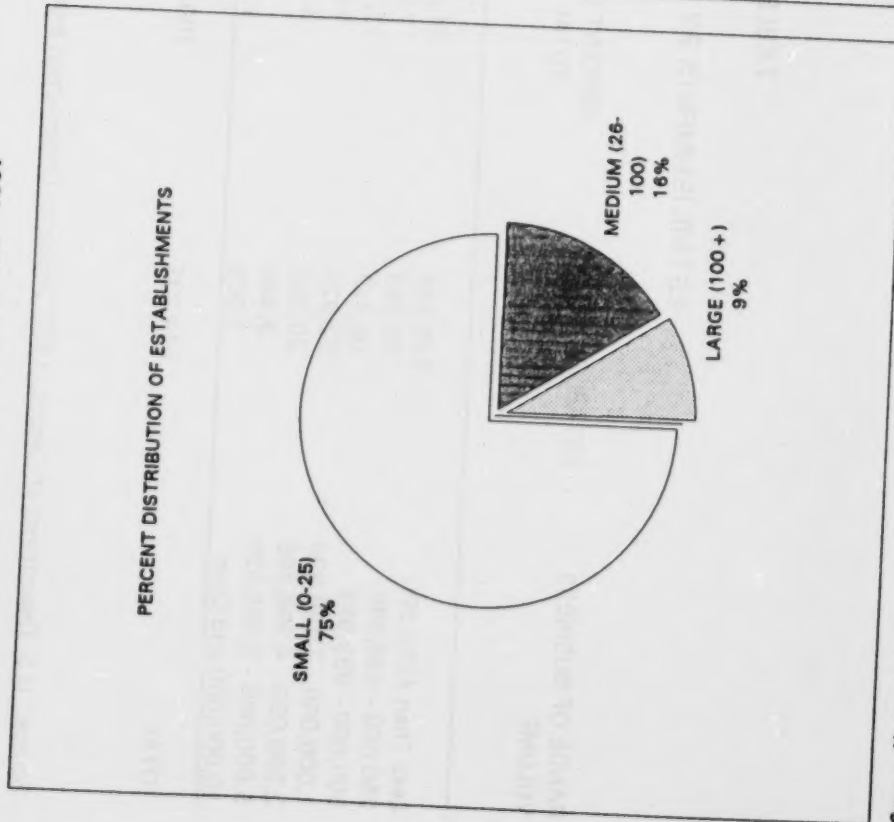
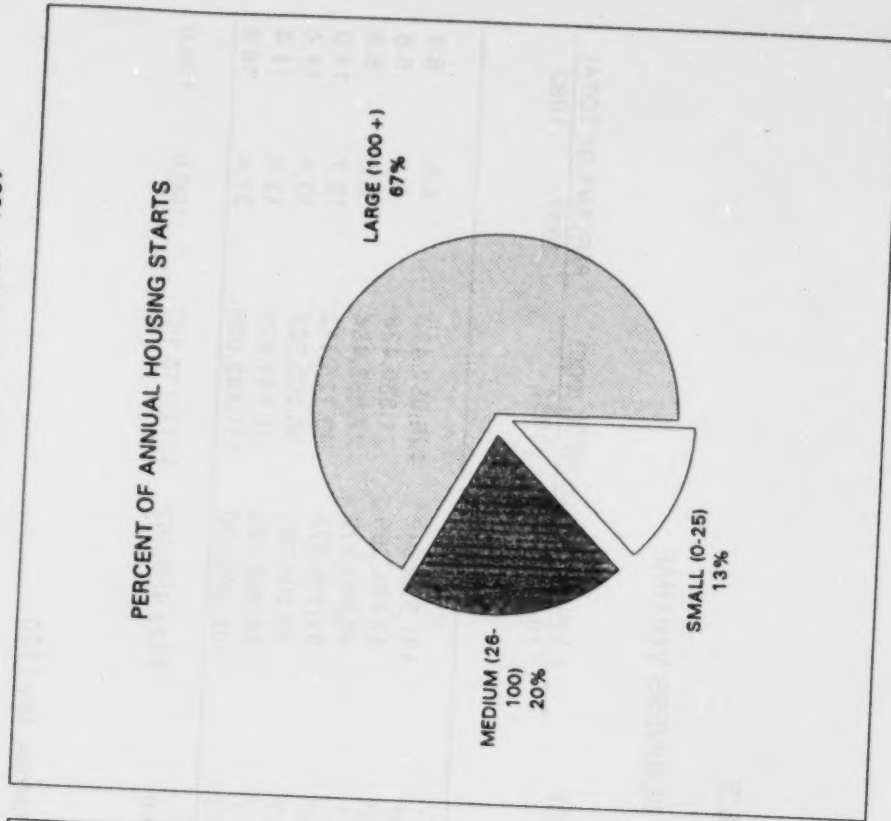


FIGURE 4
BUILDERS BY SIZE OF OUTPUT - 1987



Source: National Assoc. of Homebuilders

tion. Large firms account for 67 percent of production. The structure of the homebuilding industry is changing. In 1979, the largest 100 firms accounted for 10 percent of output, ten years later, they comprised 15 percent of total national production. Over the same period the largest 400 builders increased their market share from 17 to 24 percent. The large-scale builders normally orient production of new housing to the mass first-time buyer market. Small and medium size builders, on the other hand, tend to build for the upper reaches of the market. With the continuation of the savings and loan crisis and its restructuring, large-scale firms will capture and even larger market share as lending institutions cut back on construction loans and mortgage commitments to small builders.

Another clear trend among construction firms is that as they increase in size they increase their utilization of subcontractors. The smallest firms subcontract an average of 9 percent of their work (measured in gross receipts). The rate doubles to 18.5 percent for establishments with gross receipts of between \$1,000,000 and \$2,499,999. The largest firms grossing over \$10,000,000 subcontract out 37 percent of their work. The pattern suggests that as firms increase in scale of operation they specialize more and do not attempt vertical integration.

However, some residential builders are attempting to integrate other operations by going "upstream" and developing plots for residential projects, or setting up building materials companies, or going "downstream" and providing buyers with financial, interior decorating or furnishing services. In the 1987 survey, 50 percent of the responding firms indicated that they sometimes develop land for residential projects. For the large builders, 90 percent indicated that they carry out land development activities to support their residential construction activities.

On the other hand, there is apparently considerable diversification into other types of construction activities (residential builders building shopping malls and office buildings). In a NAHB 1987 survey of residential builders, most establishments indicated that they were engaged in nonresidential construction projects. Thirteen percent of responding firms indicated that they were constructing office buildings, 11 percent said other commercial building and 5 percent indicated that they were constructing industrial buildings. Establishment managers explained that they diversified into other projects to reduce market risk and take advantage of tax incentives.

The overall structure of the residential construction industry in North America is highly decentralized. Most firms operate in one geographic area. Approximately 50 percent of the NAHB members operate in only one county, only 4 percent operate in more than five counties. However, the large-scale firms operate in multiple locations centered around major metropolitan areas. Most of the large-scale firms are decentralized, operating as a set of autonomous "profit-centers" similar to medium sized firms in terms of subcontracting and materials procurement. Virtually

all firms have very low over-heads, making great use of sub-contractors to construct housing. With such low overheads, builders are better positioned to quickly respond to market changes. The next section reviews trends in construction industry technology in the U.S.

TRENDS IN CONSTRUCTION INDUSTRY TECHNOLOGY

In any given field the term technology may hold a special meaning. In housing, technology can generally be thought of as the application of various sciences and arts to solve problems in the production, construction and operation of housing [Laquarta and McCarty, 1992].

Historically, social progress and the development of regional architectural styles, drove housing technology. Colonialists first duplicated the styles of their homelands with the tools they brought with them. They later adapted them to respond to the climatic and social conditions of the States. The 1700's also saw the emergence of a new trade -- the builder -- as proven and widely used building techniques replaced local and intuitive techniques of construction.

Construction systems and materials started to transform the industry in 1800's. The balloon frame construction system, buoyed by the production of mass-produced nails and milled studs, began replacing the post and beam system in 1833. This system enabled a single man to build the entire frame with fewer tools (it's derivative, the platform frame, is still in use today). Prefabricated frames, walls and roofs, manufactured in one location and shipped to and assembled on site, soon followed [Condit, 1968]. Synthetic materials used to strengthen concrete led to its widespread use in the 1880's. While technological progress was being made in materials, however, the lagging development of the municipal utility systems slowed development of sanitation, lighting and heating systems [Rotsch, 1967].

Over the last 40 years, improvements in materials, tools, transport and equipment have driven progress in the construction industry. The variety of materials and the numerous ways every aspect of a house can be constructed, from foundations to roofs, has made almost every site buildable. Theoretically, such development made it possible to conserve on labor and capital while giving consumers more choice. Most of these improvements, however, have come from the research and development efforts of suppliers (supporting claims that the large-number-of-small-builder structure of the housing construction industry is not conducive to R & D or rapid change). The industry, therefore, has changed in many small ways, but not in the fundamental way a house is built.

Current and Projected Technological Developments

Recent technological improvements in construction fall into four categories: methods, equipment, materials, and components. Diffusion is expected to continue gradually over the next decade, through the use of innovative architectural and engineering design; better management controls for organizing, monitoring and controlling construction activities; more productive equipment and machinery, and new and improved materials, and prefabricated building components [U.S. Department of Labor, 1988].

Table 6 outlines the major technological advances now under way in the construction industry. Included are: design innovations, including computer-assisted design; work-flow management; computers; robots for repetitive, dangerous or remote procedures; hydraulically powered equipment; construction towers and climbing cranes; continuous paving machines; plastics for pipes, shields, panels, and coatings; and prefabricated building methods.

New methods have been introduced into several of the disciplines in the construction industry, often in conjunction with material, component or equipment innovations. Other changes sought to improve quality, better manage material flows, and shorten or maintain schedules by better organizing and controlling the design and production process. Finally, computer aided design, first introduced to facilitate architectural and engineering processes and coordination, played an increasing role in inventory management and even marketing efforts as builders, supply houses, and even home-improvement centers linked CAD to data bases and used the tool to help customers visualize the proposed product.

The lower costs of microcomputers and software has started to transform construction industry design, scheduling and management practices. In the past, only large construction firms would utilize computer-assisted design techniques to prepare plans. Now as consumers are requesting more detailed and varied design proposals firms are utilizing CAD systems. Besides helping contractors be more responsive to client needs, computer-aided design is shortening the design cycle and increasing the overall cost-effectiveness and quality of preconstruction design.

Computers are also improving the quality of project management. Many medium and small firms are now using a variety of computer assisted management tools such as CPM (critical path method) and PERT (Program Evaluation and Review Technique). Other innovations include value engineering, where designs are tested for their relative costs and benefits and total quality assurance methods to better monitor work activities and avoid construction defects.

The development of many new materials such as glazings, insulations, and sheathings has been driven by energy conservation demands while others like concrete additives, engineered wood, and composite fiber boards have been introduced to improve

TABLE 8
MAJOR TECHNOLOGY CHANGES IN CONTRACT CONSTRUCTION

Technology	Description	Labor Implications	Diffusion
Design innovations, including computer-assisted design.	Architectural and engineering plans, drawings, and specifications for the construction of a project, including use of computers.	Many new design concepts have made possible cost savings and reductions in labor requirements. Plastic design and tubular and staggered truss frames, for example, have reduced steel usage, weight, and cost of building, as well as labor requirements.	Widely used on large projects, increasingly used for medium-sized projects.
Work flow management techniques: Critical Path Method, Program Evaluation and Review Technique, etc.	Management systems that chart the work activity of a construction project in detail for control and planning and scheduling.	Computer assisted design has fostered the development and further refinement of design concepts, significantly reducing drafting requirements.	
Computers	Use of computers to design structures, develop bid-estimates, schedule and review work flow, and control machinery and equipment.	These methods reduce total construction time and cost, allow more efficient use of labor, and timely delivery of materials to job site.	Widely used by large and medium-sized firms. The systems were used, until recently, primarily for project planning by
Robots	Mechanical arm or machine capable of repetitive and remote operation.	Reduces design, bid and construction time and costs. Reduces labor requirements both in office and at the site. Increases productivity of equipment, but does not reduce need for operators.	Great potential for growth. Mainly used by largest firms in past. Now used by most medium-sized firms as well. Low cost, more powerful minicomputers and software availability make computers accessible and affordable to most firms.
Hydraulically powered construction equipment	Hydraulic motors set in motion by gasoline or diesel-powered hydraulic pump are used to provide direct power the movement and activity of construction machines.	Reduction of labor requirements less important than safety considerations. Primarily for work in areas considered too inaccessible or hazardous for workers such as inside pipes, ion superstructure of bridges, and underwater.	Very few applications at present. Anticipate rather limited use in the near future. Rate of diffusion expected to be gradual. More difficult to apply than most manufacturing operations. Will continue to be used primarily for the most dangerous jobs.
		Increases efficiency, reliability, capacity, and mobility. Reduces costs and labor requirements by replacing less efficient systems such as steam power.	Near saturation. Although hydraulic backhoes and cranes have been used in construction for many years, very rapid growth has occurred in the last 10 to 20 years due to increased power, larger capacity, and more automatic operation.

Table reproduced from: U.S. Department of Labor, Technological Change and Its Labor Impact in Four Industries; December, 1980

TABLE 6
MAJOR TECHNOLOGY CHANGES IN CONTRACT CONSTRUCTION
Page 2 of 2

Technology	Description	Labor Implications	Diffusion
Tower or climbing crane	A machine featuring a horizontal or diagonal boom on a tower that can rise with the building by climbing or by adding additional sections to the tower. It incorporates the fast boom and line capability of mobile or crawler cranes, but it is not limited by mast reach.	Reduces material handling, and reduces labor requirements by being able to hoist materials to the spot they needed atop tall buildings.	Widely used and continuing to increase in popularity, particularly in high-rise structures where crane mobility is not an important consideration.
Continuous paving (concreting) machine	A machine that puts along its own side forms, reducing the need for fixed forms; hardens a ribbon of concrete enough for it to stand without slumping after the movable forms slide forward.	Use of this technique speeds production, improves surface quality, and increases efficiency. A substantial reduction is brought about in the size of crews needed to set up and remove forms and finish the surface, by one-half in some instances.	Widely used on large and medium-sized projects, particularly for highway and airport runway surfacing. Modifications and improvements of the machine and techniques have enabled applications in parking lots, sidewalks, curbs, building cores, and walls.
Plastics	Plastics are used for a variety of construction applications; often combined with other materials because of their favorable strength to weight ratio, high resistance to corrosion, ease of application and low maintenance costs.	The use of plastics reduces costs and labor requirements for many applications. Recent trends include the development of stronger composite structural panels, plastic foam-core panels, moisture barriers for dam and road foundations. Other developments have occurred in pipe, duct work, siding, and paint. All of these applications tend to reduce labor requirements.	Widely used. Continued rapid diffusion anticipated. Application and use of plastic products are expected to expand rapidly due to the many excellent qualities of this material. In home building, for example, where the application has been limited by building codes, the use of the material is continuing to expand.
Prefabricated building methods	Factory production of mechanical, electrical, or structural components or complete structure.	Application of these techniques speeds construction, reduces on-site labor costs, changes skill requirements, reduces impact of adverse weather, and increases production efficiency.	Vast potential for growth. Particularly in housing construction. Limitations are high transportation costs, restrictive local building codes, and consumer acceptance. Despite problems, builders will increasingly rely on prefabricated components, which require less skill to assemble at the site.

Table reproduced from: U.S. Department of Labor, Technological Change and Its Labor Impact in Four Industries: December, 1988

material consistency [Jones, 1992]. Components in two categories have been used to reduce on-site construction: industrialized, which are produced or assembled before a house design is known; and, prefabricated, which is made to a specific house design parameter [Kendall, 1986]. (Pre-hung doors and windows are typical examples of the former, and trusses, wall panels or modules are examples of the latter.) Probably the most significant equipment development has been the introduction of cordless power tools, freeing the worker of the cumbersome extension cord. High-tech has also been making inroads, however, as instruments like laser-levelers replace bubble levels and office and project management are automated on desktop computers.

A Closer Look at Technological Innovations in Residential Construction

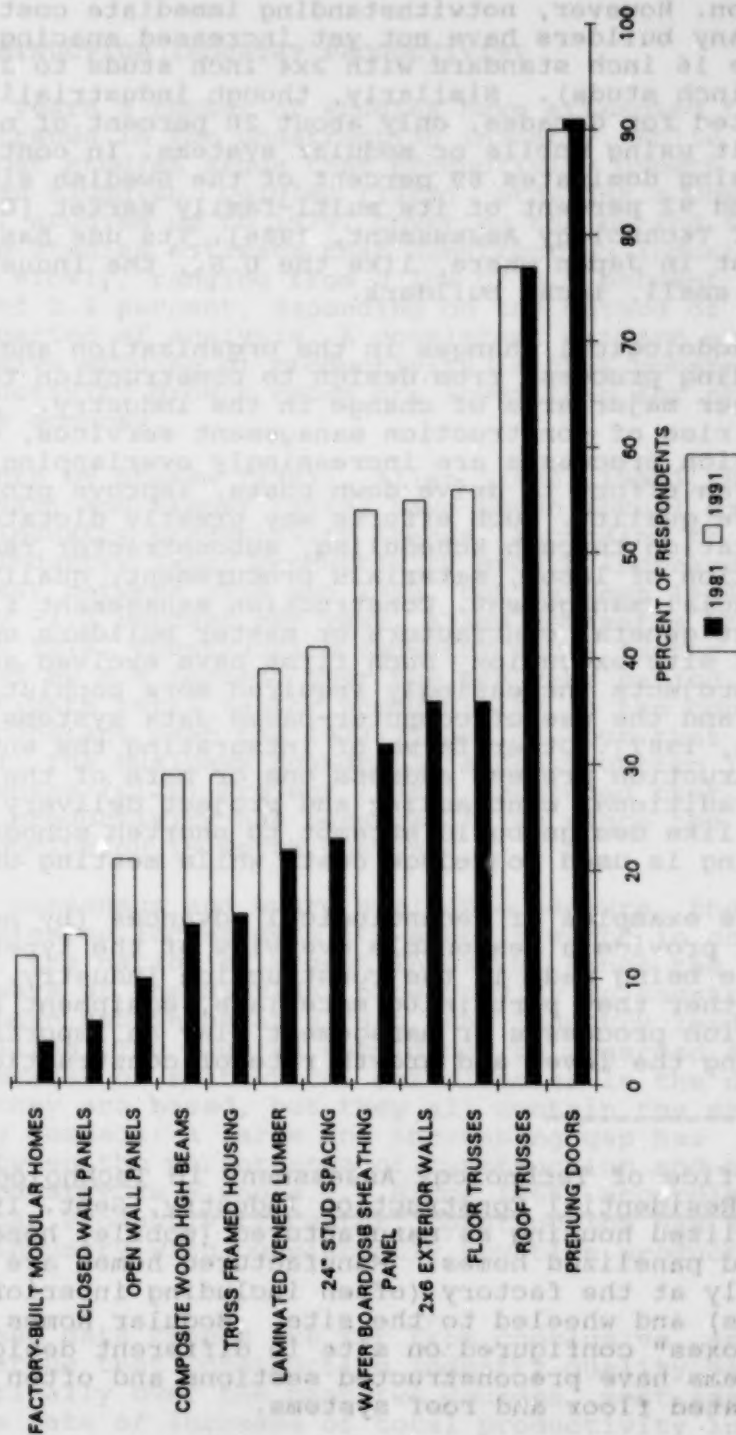
If new technologies now being developed could ever be broadly applied, houses would be easier and less costly to build, more energy efficient, and easier to service. Still improvements happen at a snail's pace [Jones, 1992]. This section reviews the results of the National Association of Home Builders (NAHB) surveys.

Despite efforts to revolutionize the homebuilding industry by way of such government programs as "Operation Breakthrough", residential construction technology is still oriented to "site-built" methods. Manufactured housing or modular housing accounts for about 20 percent of annual housing production. The remainder, 80 percent is site-built, where a multitude of building materials are joined together to construct a housing unit. What is starting to happen is that increasingly, more and more of housing components are being assembled in factories and trucked to building sites. Builders are using factory produced open and closed wall systems, pre-hung window and door systems, floor and roof trusses, and wet core bathroom systems.

The NAHB's survey of the methods and materials employed in 1981 and expected to be used in 1991 is presented in Figure 5. The percentage of firms already using pre-hung doors and roof trusses is already high at 90 and 77 percent respectively. Substantial gains in utilization are forecasted for floor trusses, 2x6 exterior walls, 24 inch stud spacing, and laminated veneer lumber. Another part of the NAHB survey captured the increased utilization of tools and materials and other methods. Cordless power tools were used by 83 percent of the firms, automatic nailing devices by 87 percent, glue nailed construction techniques by 76 percent. Collectively, these incremental technological changes are changing the industry, seemingly bit by bit. Site-based assessments of labor productivity indicate that the adoption of these technologies are increasing labor productivity.

FIGURE 5

PAST AND PROJECTED USE OF VARIOUS BUILDING COMPONENTS AND MATERIALS
NAHB MEMBER SURVEY 1981 VS 1991



Despite these advances, technology diffusion is generally slow, even where a new product or process is clearly perceived to produce a benefit. Energy efficiency improvements, for example, drove the use of 2x6 inch exterior walls to allow increased insulation. However, notwithstanding immediate cost-saving advantages, many builders have not yet increased spacing of studs (from the 16 inch standard with 2x4 inch studs to 24 inch standard for 2x6 inch studs). Similarly, though industrialized housing¹ has existed for decades, only about 20 percent of new starts have been built using mobile or modular systems. In contrast, factory made housing dominates 89 percent of the Swedish single family market and 92 percent of its multi-family market [U.S. Congress, Office of Technology Assessment, 1986]. Its use has also grown to 15 percent in Japan where, like the U.S., the industry is dominated by small, local builders.

Methodological changes in the organization and execution of the building process, from design to construction to operation are another major area of change in the industry. As is evident from the rise of construction management services, design and construction processes are increasingly overlapping and coordinated in an effort to drive down costs, improve project delivery, and assure quality. Such efforts may greatly dictate the cost of implementation through scheduling, subcontractor recruitment, mobilization of labor, materials procurement, quality control, and financial management. Construction management firms are now doing what general contractors or master builders once did as an aspect of site execution. Such firms have evolved as large and complex projects increasingly required more sophisticated record keeping and the use of computer-based data systems [Strassmann and Wells, 1987]. Other forms of integrating the entire design and construction process address one or more of the gaps created by the traditional contracting and project delivery methods. Variants like design-build attempt to shorten schedules and value engineering is used to reduce costs while meeting user needs.

These examples of technological advances (by no means exhaustive) provide a reasonable overview of the types of incremental change being made in the construction industry. New technologies, whether they pertain to materials, equipment and machinery, construction processes or management play an important role in determining the level and growth rate of construction productivity.

1. The Office of Technology Assessment in Technology, Trade, and the U.S. Residential Construction Industry, Sept. 1986, describes industrialized housing as manufactured (mobile) homes, modular homes, and panelized homes. Manufactured homes are produced extensively at the factory (often including interior finishes and appliances) and wheeled to the site. Modular homes are essentially "boxes" configured on site in different designs. Panelized systems have preconstructed sections and often come with prefabricated floor and roof systems.

ty. The next two sections review trends in U.S. construction productivity and assess what factors limit productivity growth.

TRENDS IN CONSTRUCTION INDUSTRY PRODUCTIVITY

Over the years a number of studies have attempted to assess productivity trends in the construction industry. While far from conclusive, most studies argue that productivity growth in the sector has been sluggish. Quigley [1982] provides a comprehensive review of studies up to 1979. Covering the period from 1947 to 1979, these studies estimate that construction industry growth has increased slowly, ranging from a low of 0.5 percent per year to a maximum of 2.8 percent, depending on the method of calculation and the period of analysis. A consistent pattern evident in all comprehensive studies of productivity is that construction industry productivity growth rates are lower than for other sectors of the economy.

Assessments by Stokes [1981], Allen [1985, 1989], Shriver and Bowlby [1985] and Pieper [1989] have shown actual declines in construction industry productivity trends. According to Stokes, construction industry labor productivity growth increased by 2.4 percent per year between 1950 and 1968, but between 1968 and 1978 it declined by -1.2 percent per year. Allen estimates that between 1968 and 1978, construction industry total factor productivity declined by 8.8 percent over the ten year period. Shriver and Bowlby estimate total factor productivity in the construction industry was constant over the 1972-79 period, but that it fell from 1980-1981. The Business Roundtable's Construction Industry Cost-Effectiveness (CICE) Project [1983] concluded that construction industry productivity has been declining since the 1960s. The study's conclusion is worth quoting:

By common consensus and every available measure, the United States no longer gets its money's worth in construction, the nation's largest industry. Since the closing years of the Sixties, productivity in construction has been declining at a rate many industry leaders find appalling. The figures should not be regarded as precise because of statistical deficiencies in the data on which they are based, but they all contain the same disturbing message: a large and increasing gap has opened between the performance of construction and that of U.S. industry as a whole.... Since 1965, according to the American Productivity Center, construction has been the only industry with consistently negative productivity growth.

While these data trends are far from conclusive, and there are many who argue that construction industry quality has increased dramatically over the past two decades, most analysts agree that the rate of increase of total productivity in the construction sector is below that found in other industries.

The next section describes factors that influence the level and rate of change of construction industry productivity. However, before doing so it is important to first address the lack of adequate measures of construction industry output. At present, data reporting construction industry activity, such as cost indexes prepared by Engineering News Record, Boeckh, and F.W. Dodge do not fully capture changes in construction technique and shifts in materials. They certainly do not capture changes in quality. Research by Allen [1985, 1989] and Pieper [1989] address these measurement issues. Allen estimates that construction industry productivity declined by 8.8 percent in contrast to a 21.4 percent decline reported by the U.S. government. He argues that price deflators used to estimate the real value of construction projects accounts for over 50 percent of the reported decline in productivity. Pieper also concludes that measurement errors over-estimate productivity declines, and account for 35 percent of the reported decline between 1968-1978. Research and policy analysis cannot be based on faulty construction industry data; better, more accurate construction data are necessary.

IMPEDIMENTS TO HIGHER CONSTRUCTION INDUSTRY PRODUCTIVITY

A major concern about the construction industry is its apparent backwardness in the adaptation of new construction technologies and practices which can reduce cost and/or increase quality. As discussed earlier, there was little technological advance in residential construction industry from the turn of the century to the early 1950s. Since the 1950s, there has been considerable innovation in the production of building components such as roof and floor trusses, pre-hung doors and windows, closed and open panel wall systems; tools and equipment; and new software for project design, scheduling and cost control. On another front, manufactured housing is gaining acceptance and market share. These new advances, if widely adopted, can increase construction productivity.

Unfortunately there are pervasive roadblocks to technological innovation and productivity-enhancing changes in ways of doing business. They stem from the industry's own highly fragmented and disjointed material and project delivery systems; the inability of small, undercapitalized firms to fully exploit promising new technologies; high degrees of uncertainty resulting from the cyclical nature of the building industry; the uneven quality of labor and constraints to innovation posed by union work rules and practices; and formidable institutional barriers imposed by government building codes and development regulations.

The Fragmentation Factor: Multiple Players and Linkage Problems

The high incidence of subcontracting and the heavy reliance on raw and manufactured inputs impedes the diffusion of new technologies and innovative management practices. Each player in the construction team only knows their part and little effort is expended to create a team. From the material supplier to the builder, a product is transformed and handled in multiple disconnected steps. Finally at the building site, it is the subcontractor, not the builder (now more a broker than a construction worker), who installs the product. The final buyer (one of several over time) isn't even in the picture, and when they show up a specialized agent represents their interests. This structure makes it difficult to develop the strong linkages between producers and users of new products that are essential for rapid technological advancement. Taking a product from the laboratory to the marketplace is extremely complicated. As an innovation plods through each link, it takes up more time and meets different forms of resistance.

An example of subcontractor resistance pertains to the diffusion of insulated concrete wall forms. These forms provide builders with a fully insulated form for pouring concrete that is left in place. A wall with an R-value of 20, can be built for \$3.50/square foot (\$.65/s.f. less than a standard wall) mainly by reducing labor and the number of subcontractors required. Again, however, strong resistance amongst foundation subcontractors has resulted in a market share of less than 1 percent of starts. Even in Alaska where its use would extend the building season by allowing concrete pouring in colder weather, a distributor claimed that demand only picked up once subcontractors were better informed.

An example of builder resistance is the case of foam core sandwich panels which combine insulation and sheathing into a lightweight, energy efficient unit. Builders who have used them claim savings of \$20 per square foot on hard costs and the ability to cut crew sizes while maintaining production levels. However, the product's distribution network is poorly defined and concerns about long-term deterioration are keeping its utilization level down. The manufacturer needs to expand its marketing efforts to attract the interest of builders.

An example of consumer resistance is the slow diffusion of surface raceway electrical systems, common in commercial installations, into residential construction. Residential consumers don't like the product because of the institutional look of the races, despite the fact that they allow easier access to wiring, maintain the thermal integrity of exterior walls and permit rough and finish work to be combined. Surface raceways can increase quality (better energy efficiency) and lower construction costs. Manufacturers and distributors need to sharpen their assessment of consumer preference to determine how to modify the product to best meet consumer demands.

The fragmented structure of the industry results in every part being supplied by a separate, highly specialized company. They focus on their own products and have little incentive to integrate their products with others. Builders, also small and numerous, lack the power to push for improvements and integration. Contrast such patterns to Ford or G.M. where many suppliers, are directly controlled by the car company, and must comply with their stringent requirements, even utilizing shared computerized communication networks.

On the other hand intense competition between constructors forces them to identify new cost-cutting products and methods. In countries with limited competition and domination of the sector by state-owned enterprises (SOEs) poor quality and technological backwardness is a common attribute of SOE-produced housing. As a recent World Bank Discussion Paper comments: "despite massive investments in science education and technical training, socialist country SOEs have tended to be relatively poor technological innovators, and indeed they have tended to operate below existing technology frontiers [Lee and Nellis, 1990].

Inability of Small Firms to Exploit New Technologies

If firms are too small, they will not be able to fully exploit the advantages of capital goods, and will either have higher costs because they must spread the cost of a piece of equipment over a low level of output, or they will forego the purchase of the equipment and continue to use less efficient tools or procedures.

Smaller firms lack the capacity to devote considerable attention to surveying new technologies, practices and systems. They certainly do not have the resources to conduct research and development, and are usually unwilling to take risks on new, untested materials or procedures. Small firms are also less likely to make greater use of subcontractors and instead work as "jacks-of-all-trade" trying to complete all tasks themselves. This pattern makes it difficult for firms to specialize and increase their productivity.

Changes in the quantity and quality of capital (equipment and tools) provided to workers will profoundly influence labor productivity. If firms are unable to adjust the amount of capital combined with labor, productivity will not grow. Recent advances in the hand tools and excavating equipment have boosted productivity. Pneumatic nail guns, staplers, cordless drills and screwdrivers have increased productivity. Small and highly mobile excavating equipment (bobcats, power shovels, backhoes) have increased the efficiency of site work. Without increases in capital expenditures for new equipment, productivity will not grow, as workers to make do with fewer older and inefficient tools.

As firms expand they increase their employment and procure more capital equipment. Table 7 illustrates patterns of employment and capital stock by size of construction firm. Table 8 illustrates patterns of gross receipts and value added per employee. While the typical construction establishment has an average of 9.3 employees and \$115,052 of capital equipment, as firms expand they increase their utilization of capital and labor. However, employment expansion does not outpace the growth in receipts and as Table 8 illustrates, receipts per employee increase significantly with the size of the firm.

Firms increase their capital labor ratios as they expand operations. As Table 7 shows capital stock per worker increases from \$8,934 per worker for the smallest firms to \$15,206 for the largest. A clear outcome of increasing receipts per worker and higher capital labor ratios is the consistent increase in value added per worker, rising from \$24,155 for the smallest firm to \$65,014 for the largest establishments. Pieper [1989] estimates that construction industry capital labor ratio increased substantially between 1968 and 1978 and accounted for a 4.6 percent increase in construction industry productivity.

The drawback of small firms led many analysts to suggest that housing production should be organized into large-scale vertically integrated firms. Housing production in Eastern Europe, Cuba, Algeria and the former USSR is largely organized this way. Many large firms have adopted rigid construction systems which provide little flexibility. As a consequence, building systems are standardized and can not quickly respond to changes in consumer preferences, input costs or new technologies. Now that housing markets in the transition economies are more demand-driven and more competitive, large firms are having difficulties adjusting. In Poland for example, productivity and output in the construction sector is declining rapidly. The overall structure of the construction sector in terms of firm size, levels of competition, barriers to entry and exit, linkages with materials and service providers must be considered when assessing how to best promote construction industry productivity [Dowall, 1992].

Building Cycles Limit Diffusion of New Technologies

By setting monetary and fiscal policy which indirectly determines the demand for housing, offices, commercial and industrial facilities, governments largely shape the market for construction activity. Frequently, governments pursue short term fiscal policies which produce wide swings in demand. Such variation effects construction industry in various ways: first there is considerable turnover of construction firms from peak to trough to peak and as a consequence many firms have limited experience. In times of extreme economic stress, many firms go out of business. Given the cyclical nature of construction, the level of experience, especially in the residential sector is low. In 1987, 18 percent of NAHB members had been in business for less than five years. Firms with limited experience may not be able to

TABLE 7
AVERAGE NUMBER OF EMPLOYEES AND CAPITAL STOCK BY SIZE OF ESTABLISHMENT
1987

SIZE OF ESTABLISHMENT BY BUSINESS VOLUME	AVERAGE NUMBER OF EMPLOYEES	AVERAGE CAPITAL STOCK PER ESTABLISHMENT*	AVERAGE CAPI STOCK PER EMPLOYEE
Less Than \$250,000	3.3	\$29,483	\$8,934
250,000 - 499,999	5.8	60,800	10,483
500,000 - 999,999	9.4	103,893	11,052
1,000,000 - 2,499,999	16.5	207,238	12,560
2,500,000 - 4,999,999	31.5	437,658	13,894
5,000,000 - 9,999,999	55.7	764,021	13,717
10,000,000 and Over	161.8	2,460,396	15,206
TOTAL	9.3	\$115,052	\$12,371

* Depreciable assets (buildings, equipment)

Source: U.S. Department of Census, 1987 Census of Construction Industries, July 1990.

TABLE 8
VALUE ADDED PER WORKER BY SIZE OF ESTABLISHMENT - 1987

SIZE OF ESTABLISHMENT BY BUSINESS VOLUME	GROSS RECEIPTS PER EMPLOYEE	VALUE ADDED PER EMPLOYEE
Less Than \$250,000	\$43,667	\$24,155
250,000 - 499,999	60,773	31,542
500,000 - 999,999	74,280	36,783
1,000,000 - 2,499,999	93,533	44,306
2,500,000 - 4,999,999	109,521	50,286
5,000,000 - 9,999,999	122,964	53,703
10,000,000 and Over	172,377	65,014
AVERAGE	\$103,369	\$45,540

Source: U.S. Department of Census, 1987 Census of Construction Industries, July 1990.

accurately evaluate the potential usefulness of new technologies since they lack an institutional memory of how past technologies improved construction cost-effectiveness and quality.

Second, variations in demand disincline firms from adopting some building technologies which are cost-effective when demand and production levels are relatively constant. But the biggest impediment to innovation is that most construction industry managers are focused on short-term survival. Varying economic conditions and fluctuations in output limit construction establishments interest in and ability to successfully adopt new technologies.

Third, firms are more likely to rely on subcontractors than long-term employees to perform services, even though employees may be more cost-effective [Manski and Rosen, 1978]. Given wide cyclical swings, builders rely on outsiders for technical support and assemble subcontractors to build projects. It is the subcontractor, not the builder who puts an innovation in place, and since they go off to another job, they frequently carry the knowledge with them. Consequently, there is little incentive for a builder to invest in a new innovation if he thinks that his subcontractors will "borrow" the idea and use it with a competitor.

Labor Quality and Unionization

An important determinant of construction productivity is the quality of labor. High labor turnover and low skill levels work to reduce labor quality and productivity. Fortunately, the average level of schooling of construction industry laborers and craftsmen has been increasing and has helped to increase labor productivity. Allen [1985] reports that increases in training accounted for a 2.4 percent increase in productivity between 1968 and 1978. Data from the NAHB indicate that the overall level of education of homebuilders has increased substantially from 1969 to 1987. In 1969, 34 percent of heads of firms had completed at least a college degree. In 1987, 52 percent of heads surveyed had at least a college degree [NAHB, 1988].

Unionization can also effect productivity. The most direct way is that union work rules limit worker flexibility and lower productivity. By dividing tasks among individual workers, labor is often idled and jurisdictional disputes arise. Other factors also affecting productivity are wage rates, work time, and stoppages. Allen estimates that unionization accounted for a 1.2 percent decline in construction productivity over the 1968-78 period.

Many of the new construction industry technologies will reduce the demand for construction industry labor. As a consequence, labor unions are resistant to new technologies and support innovation only if it reduces costs without reducing

requirements for labor, requiring changes in skill level or replacing local with off-site labor.

A good example of such resistance is the difficulty manifold plumbing systems are encountering in gaining market share. These manifold systems work like a breaker box for water lines, controlling water flow and pressure and allowing the use of smaller pipe diameters. They also provide a central and easy to get to access to a house's plumbing. Its use adds material costs, but one manufacturer claims it will reduce labor time by 20 percent. Plumbing subcontractors and unions are resistant to the product. In part this is due to the residual impact of old PVC piping problems, but its use also reduces labor and subcontractor profit, and requires an understanding of water flow calculations for smaller diameter pipes.

Management Effectiveness

Another critical determinant of construction productivity is the overall effectiveness of construction industry management. Managing the construction of a building or project is extremely complex, moving from project conceptualization, preliminary design, detailed design, bidding, construction and finally project operation and management. Management practices can significantly influence the overall cost of project execution and the extent to which the end-user is satisfied with the product.

Effective supervision of site work can lead to high levels of productivity. This means that foremen must accurately plan work, communicate with workers, provide motivation and direct work activities. Studies by the CICE Project found that many foremen are not effective managers. The most common problems of ineffective job site activities are: lack of materials; 2) confusion over roles and responsibilities; 3) incompetent supervision; 4) breakdowns in communications; 5) redoing of work; 6) lack of tools; 7) lack of cooperation between crafts; 8) incomplete or inaccurate engineering drawings and 9) restrictive or burdensome regulations [The Business Roundtable, 1983].

Many of these problems could be removed with closer attention to detail and better supervision and training. Management tools such as total quality assurance; program review and evaluations and critical path methods can be applied to anticipate work problems. Education and access to computer tools are essential for increasing construction productivity. The Business Roundtable's Construction Industry Cost-Effectiveness Project placed considerable attention on management shortcomings and offered sound advice for improving management systems including: accident prevention; reduction of scheduled overtime; better trained foreman; more effective supervision; openness to improved technology; use of new scheduling and management tools such as Critical Path Method [1983].

Government Regulation

Building codes have been found to increase the cost of housing in the United States. A comprehensive study by the U.S. General Accounting Office [1978] found that unnecessary building code requirements increased housing costs by an average of \$1,700. At one level, building codes make construction costly because they require expensive but unnecessary materials or construction procedures. On an other level, codes make the adoption of new technologies difficult by raising the costs of gaining approval for new products.

The diffusion of new building materials could be accelerated if manufacturers could turn to a single building code to guide product design. Instead it is often up to the builder to determine whether a new product or process is acceptable. The lack of uniformity, at least in interpretation if not in the actual code, places the burden on the builder to prove an innovation is acceptable. Even if the codes allow application, if it isn't "standard practice" the builder may risk possible future liabilities if something should go wrong.

There are more subtle forms of resistance to new technologies than just the codes themselves. Sackett found that although 36 states have provisions in their building codes permitting the use of manufactured systems, local building officials have been known to subvert the process [1990].

Governments at all levels set land use and environmental regulations which greatly control the location, intensity, character and cost of construction. Land use and environmental regulations can add 20 to 25 percent to the cost of residential construction in some highly regulated jurisdictions [Dowall, 1984]. While these regulations enhance the quality of these residential environments it is not clear whether they offset increased costs.

Summary of Impediments to Higher Productivity

A number of factors conspire to impede the diffusion of new innovative construction products and methods. First, the construction industry is highly fragmented and it is difficult and expensive for manufacturers to market new products. Second, the small size and limited capital base of most firms makes it difficult for them to adopt innovations. Building cycles force firms to concentrate on short run issues and to ignore the long run benefits of new construction technologies. Only when an innovation is necessary to maintain or increase market share or will clearly improve bottom-line profitability will construction firms take up new technologies. Third, labor unions and government regulations stand in the way as significant institutional forces restraining the advance of innovation. Lastly, the effectiveness and quality of construction industry management, especially at the foreman level, must be upgraded to increase productivity.

Firms need to implement new management systems for project design, construction scheduling and control and quality assurance.

RECOMMENDATIONS

This paper provided an overview of the structure of the U.S. construction industry, described trends in technological innovation and construction industry productivity. It also described the factors impeding increases in productivity and cost-effectiveness. On the basis of our review we offer the following recommendations for discussion:¹

1). Construction industry performance data should be improved. UNIDO should provide leadership in organizing such activities. The UNCHS-World Bank Housing Indicators Project might serve as a model.

2. UNIDO should undertake case studies of construction industries in a variety of developing countries to assess trends in construction productivity and cost-effectiveness.

3. UNIDO should initiate case studies in a variety of countries to determine the extent to which prefabricated and manufactured building components can be adapted for use in developing countries.

4. UNIDO should help to organize and strengthen professional construction associations and help them to design and execute action plans for increasing construction industry productivity and cost effectiveness.

5. UNIDO should initiate case studies to determine how to strengthen linkages between building product industries, contractors and government building code agencies.

6. UNIDO should work with other UN and international agencies to increase the range of innovative low-cost construction techniques and materials.

7. UNIDO should work with other UN and international and national agencies to develop more appropriate building and construction standards which can provide good quality but low-cost products [UNCHS, 1989].

1. See Professor Tassios's paper on construction industry issues and recommendations pertaining to developing countries [Tassios, 1992].

8. UNIDO should work with professional construction associations to develop professional training courses on construction management, construction technology, and computers in construction design and management.

RECOMMENDATIONS

This paper provides an overview of the situation in the construction industry in the United States. It also identifies the major problems in the industry and suggests some possible solutions. On the basis of the review, the following recommendations are made:

1. The construction industry should be encouraged to develop a more professional image. This can be done by promoting the industry's role in the economy and by emphasizing the industry's commitment to quality and safety.

2. The industry should be encouraged to develop a more professional training system. This can be done by promoting the industry's role in the economy and by emphasizing the industry's commitment to quality and safety.

3. The industry should be encouraged to develop a more professional management system. This can be done by promoting the industry's role in the economy and by emphasizing the industry's commitment to quality and safety.

4. The industry should be encouraged to develop a more professional technology system. This can be done by promoting the industry's role in the economy and by emphasizing the industry's commitment to quality and safety.

5. The industry should be encouraged to develop a more professional computer system. This can be done by promoting the industry's role in the economy and by emphasizing the industry's commitment to quality and safety.

6. The industry should be encouraged to develop a more professional design system. This can be done by promoting the industry's role in the economy and by emphasizing the industry's commitment to quality and safety.

7. The industry should be encouraged to develop a more professional construction system. This can be done by promoting the industry's role in the economy and by emphasizing the industry's commitment to quality and safety.

8. The industry should be encouraged to develop a more professional management system. This can be done by promoting the industry's role in the economy and by emphasizing the industry's commitment to quality and safety.

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THE INSTITUTIONAL MECHANISMS OF THE CONSTRUCTION SECTOR AND THE
ROLES OF THE PARTIES CONCERNED AS APPLIED TO SOCIAL HOUSING

A comparison between France and Italy*

Prepared by

F. Degorce**

* The views expressed in this paper are those of the author and do not necessarily reflect the views of the Secretariat of UNIDO. This document is a translation of an unedited original.

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INTRODUCTION

This study of the institutional mechanisms of the construction sector and the role of the actors as applied to social housing has been made as part of the preparatory work for the First Consultation on the Construction Industry to be held in Tunis (Tunisia) from 3 to 7 May 1993. This comparative analysis of the systems in operation in France and Italy highlights their strong points and drawbacks as well as the constraints on and prerequisites for developing a housing policy for the poorest sectors of society. The approach used in performing the study may serve as a basis for researching social housing in other countries.

In his study on the structures and operation of the construction sector, Professor TASSIOS showed the different levels of involvement necessary for setting up an organization in the building industry. His outline clearly shows how close the links are between subsidy policies, regulations, production (carrying out construction projects and manufacturing) and a definition of "the rules of the game" among the actors which takes account of the different phases in the life of the project (in brief, inception, design, construction, maintenance) and also the way in which training and research fit into the pattern.

This document is not intended to cover social accommodation in France and Italy exhaustively, but to illustrate the different levels of involvement in the organization of the construction sector in the particular case of housing. In addition, a comparison of the two countries reveals the different ways of handling identical problems and the variations devised to deal with each country's specific features.

Finally, the study identifies a certain number of key points which may be discussed at the Consultation in Tunis in May 1993.

The information used in preparing this study was largely taken from the book "Housing Construction in France and Italy", which was compiled as part of the Eurorex Programme (see page 9).

I. CONTEXT

A. Geographical, economic and political aspects

	France	Italy
Population	57 million	58 million
Surface area	552,000 km ²	324,000 km ²
Population density (persons per km ²)	103	191
Percentage of people living in towns	74.3 per cent	68.9 per cent
Per capita gross national product (US\$)	19,480	16,850
Unemployment rate	10.1 per cent	10.2 per cent
Political system	Republic; President elected by universal suffrage with a seven-year term of office	Republic; President appointed by Parliament with a seven-year term of office
Administrative organization	24 regions 95 departments 36,000 communes	20 regions 95 provinces 8,074 communes

1991 figures.

B. Construction sector

In France

The building and public works sector is the leading sector in the French economy. Its production is equivalent to the production of cars, electrical equipment and domestic electrical appliances all put together. As the time driving force in the French economy, this sector resorts to few imports and by the same token its operations abroad account for a fair amount of foreign trade. The sector has been on a slight downtrend since 1989.

In Italy

The Italian construction sector is the third largest in Europe after Germany and France. As in France, activity has been declining since 1989.

	France	Italy
Building and public works turnover (US\$ thousand million)	121	110
Percentage accounted for by building in the building and public works turnover	57 per cent	78 per cent
Economic ranking of the sector in Europe	2nd place	3rd place
Enterprises (in thousands)	311	495
Persons employed in building and public works (in thousands)	1,600	1,859

1990 figures.

C. Construction other than housing

In France

In 1990, construction other than housing in France accounted for 63 per cent of the building activity measured in completed square metres. Following a boom period between 1985 and 1990, office construction slacked off considerably in 1991, and this trend seems to be continuing at present. Socio-cultural amenities and schools are fairing quite well, since decentralization has promoted the building of amenities in local communities. Furthermore, many towns have been developing urban improvement projects, as reflected by the fact that politicians have recently become aware of issues surrounding the quality of life. In addition, the construction market for this decade will be university facilities, since almost two million square metres are scheduled for completion.

In Italy

In 1990, in terms of volume (m³) the non-housing construction sector in Italy accounted for 53.8 per cent of applications for building permits. There has been steady growth in this sector since 1988. This dynamic movement appears to be basically due to the industrial modernization efforts of the north of Italy to the development of the tertiary sector throughout the country.

D. The accommodation market

In France

In France, the building and completion of new dwellings has been on the decrease for the last 10 years (550,000 in 1975 as opposed to 260,000 in 1990). Currently only half as many blocks of flats are being built as in 1973 and the number of home owners continues to increase. Home improvements now

account for a large proportion of building activity, since the percentage of older buildings is high (90 per cent were built before 1981) and the State is promoting energy conservation, thereby encouraging people to have insulation installed. Finally, the problems of building in town centres (the high cost of land, town-planning restrictions) have led to construction activity founded on restoration work. In France the right to housing is a fundamental right. The Law lays down that guaranteeing the right to housing is a duty involving solidarity for the whole nation. With this in mind, the authorities have introduced various schemes to house disadvantaged persons, for example, by setting up a mutual aid fund in each Department or by granting tax relief on land revenue to landlords who rent out their property to people living on a low income.

In Italy

As in most European Community countries, Italy has also been experiencing a decrease in housing construction over the last 10 years. Here too there has been a shift towards renovations and maintenance, which account for 46 per cent of investment in the housing sector. In 1990, 287,000 dwellings were built in Italy, 25 per cent being detached houses (although this is not the whole picture, since 34 per cent of the blocks of flats are small-scale blocks containing between three and 15 dwellings). Energy conservation policies have taken the form of rather restrictive regulations and subsidies for heat insulation work. There is a lot of talk about so-called "Abusivismo", which refers to the approximately 50,000 dwellings a year built totally illegally (without building permits). Given these high figures, the authorities have been forced to legalize any of these buildings put up before 1986. In addition, since Italian law prevents rent increases, accommodation is no longer thought of as an asset and landlords prefer to leave their property empty with a view to selling it. This has led to an extensive housing crisis in Italy, especially within the context of the economic difficulties faced by all European Community countries.

	France	Italy
Proportion of construction other than for housing	63 per cent of building activity in m ²	53.8 per cent of applications for building permits
Total dwellings in millions of units	26	24
Dwellings per thousand inhabitants	463	417
Annual production (in thousands)	309	287
Detached houses	52 per cent	25 per cent
Proportion of people owning their own home	54.3 per cent in 1988	73 per cent
Average living area	87.3 m ²	90 m ²

1990 figures.

E. Social housing

In France

The low-rent housing organizations play therefore a leading role in urban policies and are an integral part of the French housing market.

The 1,000 such organizations manage a reserve of more than 3 million social rented dwellings, accounting for 46 per cent of the total number of dwellings for rental. They are also involved in the home ownership sector, financing or building homes intended for sale with the help of an assisted loan. They build approximately 80,000 homes a year and renovate a further 150,000. Twenty-five per cent of the rental programmes and 70 per cent of the home ownership programmes involve detached houses. In order to have access to the housing finance, the organizations are obliged to adhere to the minimum legal surface areas, which average 62 m² in the case of rented blocks of flats and 77 m² in the case of detached rental houses. The homes for sale are considerably larger.

In Italy

The State, the local authorities and the IACPs (Autonomous Institutes for Social Housing) are responsible for low-cost dwellings. However, with 78 per cent of social housing belonging to them directly, the IACPs, which are comparable to the low-rent housing organizations in France, dominate social housing in Italy. Whereas the low-rent housing organizations in France are financially stable, the IACPs suffer serious financial difficulties largely due to the very low rents which slow down construction and renovation and give rise to serious maintenance problems. Furthermore, the virtual disappearance of the private rented sector affects the public domaine, which, despite its limited facilities, is supposed to rehouse the homeless. In this way, nearly 80 per cent of the homes built are used for rehousing private sector "refugees". The IACPs are hardly ever involved in property for sale, as this role is played by the cooperative movements which build approximately 40,000 homes per year. Social dwellings are also offered for sale by construction companies.

	France	Italy
Public sector client*	Low-rent housing organizations	The State, local authorities, IACPs
Reserve of social housing (in millions of units)	3.2	1.2
Percentage of total rented accommodation	46 per cent	19.7 per cent

* The French term "maître d'ouvrage" refers to the person initiating the project, financing the operation and issuing the invitation to tender, in other words the client.

	France	Italy
Annual production (in thousands)	80	15
Annual renovation and maintenance (in thousands)	150	25
Average surface area of a four-room flat (five to six persons) 77	85	
Average monthly rent	1,089 F	450 F

1990 figures.

II. FINANCING OF HOUSING

A. Institutions providing finance

In France

The institutions providing loans fall into four categories:

- The "Caisse des dépôts et consignations" (Deposit and Consignment Fund), which is a government body specializing in funding the low-rent housing sector;
- The "Crédit foncier de France" (French Building Society), which is a government-controlled body basically dealing with families buying their own home;
- State-owned and private banks and finance companies specializing in this sector to varying degrees (officially agreed loans, freely negotiated loans);
- Savings banks and provident funds.

In Italy

There are two types of bodies providing finance:

- The building societies (21 of them);
- The credit institutions in the forms of banks and savings banks.

Building societies are financial bodies in which the State has the major holding. They specialize in medium- and long-term loans for financing building and buying property.

In theory, the other establishments are supposed to handle short-term transactions only.

B. Types of financing

In France

Financing for housing basically takes the following forms: building grants, personal grants, company taxes, tax incentives and mortgages.

1. Building grants

Total expenditure on building grants, which are entirely funded by the State, amounted to 19.6 billion francs in 1990. There are three types of grants:

(a) Grants for social rented housing

Grants for social rented housing are intended to help the low-rent housing organizations and mixed investment companies to finance the purchase of land, the building of homes and the purchase of dwellings for renovation. This aid is granted in two forms: assisted loans for the building of accommodation for rental and premiums for improving housing.

In 1990, grants for social rented housing enabled 75,000 new dwellings to be built and 200,000 low-rent homes to be renovated. In 1992, the lending rate for social accommodation was 5.8 per cent over a period of 30 years.

Note: (i) The houses financed by these grants are subject to legal obligations, for example price regulations, living standards, availability of resources for tenants and fixed rents.

(b) Grants for home ownership

Assisted loans for home ownership are intended to finance the building operations and purchase transactions for families with a low income. The lending rate is currently 8.9 per cent for a loan over 20 years.

(c) Grants for home improvements

Premiums may be granted both to owner-occupiers or to lessors undertaking improvement work on their dwelling.

2. Grants paid to individuals

Benefits paid to individuals are funded by the various social welfare schemes, by a share of company taxes and also from the State budget. These benefits (which are means-tested and take into account the number of dependants and location) are granted to tenants or to persons paying back a loan on their main residence in the case of home ownership or home improvements.

In 1990, the total budgetary expenditure on grants paid to individuals amounted to 20.9 billion francs.

3. Company taxes

Private companies employing more than 10 persons are obliged to pay contribute to housing investment activities. In 1992, this so-called

"one per cent" contribution amounted to 0.45 per cent of the total staff emoluments. The companies usually pay the contributions to collecting organizations which grant loans to employees and invest in social accommodation programmes in which flats are reserved for the companies' employees.

4. Tax incentives

A number of housing-related tax incentives have been introduced, not only for those buying their main residence with a loan, but also for landlords who undertake improvement work and for persons investing in rented accommodation. Furthermore, social housing clients are exempted from land tax on the premises they have built during the first 15 years of use. In addition, the majority of housing-related savings accounts are exempted from tax on the interest.

5. Other loans

There are other housing loans which do not qualify for direct government grants, but are governed by regulations and offer attractive terms for those taking them out (rates of between four and six per cent).

In Italy

State intervention in the building of low-cost housing basically involves two types of financing: subsidies and bank loans with interest rate subsidies.

1. Subsidized housing

The low-cost rented housing sector is totally subsidized by the State and geared towards the most disadvantaged persons. These dwellings are built and managed by the IACPs (social housing organizations). The subsidies are funded largely from salary deductions and are granted to local authorities and IACPs for building homes, purchasing premises for renovation and improving existing rented accommodation.

2. Assisted housing

Assisted housing intended for rental or for sale is financed with bank loans with interest rate subsidies for a term of 15 years, with the State making up the difference between the rate paid by the recipient and the reference rate. These loans are most often granted to cooperatives or construction companies involved in providing housing for sale to low-income families. Regional authorities are also entitled to grant loans with interest rate subsidies to private individuals satisfying the income criteria for the purpose of building or upgrading their main residence.

In addition, loans with interest rate subsidies may also be granted for improvements to the communal parts of buildings to individual landlords on a joint-ownership basis or to cooperatives.

The interest rates are between three and 10 per cent, depending on the terms of the loan and the income bracket.

Since February 1992, regional authorities have been legally entitled to allocate part of the assisted financing to erecting rented housing which the tenants are subsequently entitled to buy. These projects are handled by the IACPs, local authorities, cooperatives and construction companies.

Note: (i) Subsidized or assisted housing must comply with regulations on maximum and minimum legal surface area and stay within the upper price limit. In addition, end recipients must satisfy the required conditions in respect of their income.

(ii) Housing programmes qualifying for State funds are located in areas earmarked for social housing on the land utilization plan, and on land which could be sold or put under a building lease.

3. Funds for buying and developing land

Credit for buying and developing land comes from a revolving fund which is financed with the incoming money from financing previously granted for this purpose. These are 10-year interest-free loans granted to local authorities for buying and developing land earmarked for low-cost housing and for buying built-on land which is to be upgraded.

5. Tax incentives

In certain circumstances, there are a number of incentives in respect of housing, such as exemption from building permit fees, exemption from land tax for 15 years, VAT reductions, registration rate reductions and tax-deductible interest on loans.

6. Other loans

The loans granted by banking or credit institutions may cover 50 to 75 per cent of the cost of the dwelling, with a duration of between five and 15 years, at a fixed or variable rate. Currently, the bank interest rate is approximately 14 per cent. The State does not have a clear policy encouraging households to save, but banks sometimes make financial offers of this type.

III. RESEARCH AND EXPERIMENTATION

In France

In France it is the Ministry for Equipment and Housing which distributes the bulk of the public financing for research into building. Its 1991 budget amounted to 438 million francs, which was split between "institutional" research carried out by bodies under its supervision and "incentive" research promoted by the PCA (Construction and Architectural Plan) and also the Urban Plan. The former is an interministerial type of body whose job it is to promote research and innovation in the domaine of accommodation and, more generally, in construction. It promotes life-size research involving all the parties concerned (researchers, designers, craftsmen, enterprises, manufacturers, clients and communal authorities, trade unions and residents). The PCA is responsible for the Eurorex Programme aimed at promoting cooperation between researchers and French and European professionals in the

search for more suitable methods and techniques. It is under this programme that the comparative aspects of practices in the French and Italian construction sectors referred to in this study have been brought to light.

The PCA also deals with the following subjects on an ongoing basis:

- Socio-economic aspects of the residential environment;
- Employment, qualifications, training;
- New products and materials.

Some of the research is also undertaken at educational establishments such as the National Bridges and Highways College, the National Public Works College and the architectural colleges and laboratories for architectural and technical research. In the private sector, considerable work in this area is done by the vocational and technical centres, which are often financed by an additional levy on production and maintain close links with the building trade. They undertake specific research projects under contract and work alongside government research establishments in formulating technical and standards documentation, and in promotional activities and quality control.

In Italy

There are three research structures:

- The CER (National Research Board), which is State-run and basically funds the practical research at universities and its own institutes;
- The Ministry for the Scientific and Technological Research University, which works together with the CER, among others, in launching and coordinating national research programmes aimed at developing highly innovative technology. The Ministry also finances basic and applied research at schools of architecture and engineering;
- The Committee on Living Conditions, which comes under the Ministry of Public Works and is in charge of the planning and supervision of low-cost housing projects, has initiated a series of housing-related research programmes with emphasis on on-site research, procedures and quality. The main aims of these programmes are:
 - Improving quality (quality of life and comfort);
 - Keeping costs down and maintenance;
 - Improving productivity;
 - Technological innovation;
 - Energy management.

IV. TECHNICAL REGULATIONS

A. Comparison

In France

The French regulations are strictly national. The rules for implementing and calculating the construction work are laid down in the DTUs (Standard Technical Documents) and are known as DTU "standards". These DTUs are not legislative texts, but are sometimes mandatory, for example in the case of public contracts. They inform various branches of the building industry on the specifications which must be complied with, the choice and use of materials as well as certain standard calculations for the purpose of designing works in accordance with the conditions under which they will be used.

In Italy

In Italy, in addition to national technical regulations, there are also regional and sometimes local ones. The standards set by UNI (National Standardization Office) only serve as recommendations and are not binding until they appear in market contracts or in the engineer's job specification. In both countries building regulations are basically aimed at the safety and quality of life of individuals, and cover the following areas:

- Stability of the structure;
- Protection against earthquakes;
- Fire protection;
- Ventilation;
- Acoustics;
- Heat production and utilization (cutting down on energy consumption and insulation).

The differences between the regulations in the two countries obviously affect the projects. Whether it be fire regulations, access by the disabled, or surface area standards as applied to social housing, the designer will have to take all the regulations into account when translating the programme into architectural reality.

B. European context

The 1986 Single European Act extended the Treaty of Rome in order to create a single European market on 31 December 1992, as a vast space without internal borders allowing the free movement of goods, persons, services and capital. One of the new mechanisms is known as the "new approach". This is not intended to harmonize all technical regulations, since such a move would be liable to create obstacles to the achievement of a single market, but to use European directives ("framework laws") to lay down limits and a general outline for technical regulations.

For construction using the materials and industrial products qualifying for free movement within the single market, the following conditions and mechanisms apply:

- The six basic requirements which building work must satisfy are:
 - Mechanical resistance, stability of the constructions and their components;
 - Safety in the event of fire;
 - Health, sanitation and environmental standards;
 - Safe when used;
 - Anti-noise protection;
 - Energy saving and heat insulation.
- The Harmonized Technical Specifications regarding the characteristics and performance which the materials and products used must show if the construction is to satisfy basic requirements. The specifications set out the required properties by type of product and by new product. These harmonized technical specifications must be complied with when marketing products falling within the scope of the Directive.

The future European standards will have a profound effect on the national building regulations of the Community countries. However, **Standardization** should not be confused with **Legislation**, and it should not be forgotten that even if a large portion of the standardization becomes Community legislation, it is still the member States' prerogative to set the minimum technical safety level in respect of each basic requirement.

V. THE PARTIES INVOLVED IN CONSTRUCTION AND THEIR RESPECTIVE ROLES

A. The client (maître d'ouvrage)*

1. The social sector

In France

The low-rent housing organizations are the chief means by which housing policy is implemented in France and count among the most autonomous such organizations to be found in Europe. The social client (maître d'ouvrage)* formulates the programme, carries out the operations, assigns accommodation and fixes rents. The activities of these organizations are diversified, since they are also involved as property developers, builders and managers of houses as well as buying up and upgrading old buildings and constructing facilities for social tourism. They are responsible for a third of all building activity each year and nearly 13 million people live in dwellings put up with their assistance. All these organizations are non-profit-making. Although they have genuine autonomy, the whole of the social housing sector is subject to administrative and financial supervision which is both strict and complicated. Each organization of this type forms part of a federation, which

in turn comes under UNFOLHM (National Union of Federations of Low-rent Housing Organizations).

In Italy

(a) Public operators

In Italy social housing is mainly the responsibility of the 106 IACPs (Autonomous Institutes for Social Housing), which are non-profit-making bodies governed by public law. The stock of social housing in Italy covers 1.2 million housing units (800,000 of which belong to the IACPs). This represents 19.7 per cent of all rented accommodation and approximately 6 per cent of all accommodation, which puts Italy at the bottom of the European Community ladder in this respect. The IACPs manage and renovate their own dwellings, but also housing owned by the State and local authorities (communes) in a capacity of delegated clients.

(b) Private operators

In the case of the lower and middle classes, the building of homes (mostly for private ownership) is handled by housing cooperatives and construction companies which carry out projects with assisted financing (see page 6). Cooperatives build between 30,000 and 40,000 homes per year and may be active in the areas set aside for low-cost housing. These homes may also be intended for a special type of rental known as "joint ownership", which guarantees that the partners are entitled to unlimited use of the dwellings.

2. Non-social private sector

In France

In 1991 nearly 60 per cent of homes were built by private clients. They fall into three broad categories: individuals, specialist companies and institutional investors.

- Private individuals account for 50 per cent of housing production each year, and 90 per cent of this involves detached houses.
- Companies specializing in construction account for about 15 per cent of housing production, three quarters of which represents blocks of flats.
- Institutional investors, such as insurance companies and banks, account for about one per cent of the new construction, mostly in the rented sector and in city centres.

In Italy

In Italy the private sector is responsible for more than 90 per cent of housing construction. Here, too there are three categories:

- Private individuals who account for 50 per cent of dwellings built, which are mainly detached houses. The majority of them receive no public aid;

- Developers who account for 30 per cent of new houses built, mainly for private ownership;
- Institutional investors, such as insurance and provident companies, which are required by law to invest in housing for rental.

B. Building project management (design and on-site supervision)

In France

In France the profession of an architect is legally defined as involving "architectural creation and quality of construction in the public interest". There is a professional body which is responsible for accepting new architects into its ranks and imposes a code of professional ethics upon its members. Since 1977 it has been compulsory under the regulations governing building permits to use the services of an architect for any construction project involving a surface area equal to or greater than 170 m², and 800 m² in the case of farm buildings. The number of architects or persons qualified to work as architects enrolled in the professional body is 26,000.

In Italy

Italian regulations require the services of a designer for any construction or architectural modification, whether inside or outside (the technical service of the municipality must be informed of all modifications, but a building permit is only needed for modifications affecting the structure or façade). The designer may be an architect, an engineer or a land surveyor, although land surveyors may deal with small buildings only (fewer than two floors made of reinforced concrete and not in seismic zones). Licence applications must be countersigned by a member of one of these three professions who is duly registered in the respective professional body. The number of designers totals 157,000 persons (52,000 architects, 20,000 engineers and 85,000 land surveyors).

1. Tasks and fees

In France

The role of the project manager (maître d'oeuvre) is defined by the Law governing Public Works Management (MOP). The architect's services have been split into 12 standard engineering tasks defining the content of each stage. Normally the architect is entrusted with the design and on-site supervision. The choice of architect is open. In the case of public contracts, larger-scale projects require the architect to be selected on the basis of a competition in accordance with the Public Contracts Code. Architects for Public Contracts are paid according to the scale of fees laid down by the Public Contracts Code, whereas in the case of private projects these fees may be freely negotiated.

In Italy

In addition to the traditional tasks which are the same as those carried out by their French counterparts, Italian architects may also take on the job of calculating reinforced concrete structures and carrying out inspection. It is common for the designer and the building supervisor to be two different

people professionally. In Italy fees are calculated in the same way as in France. Private sector contracts may be freely negotiated, although there is a recommended standard contract setting out the minimum mandatory fees for the profession.

2. Duties and responsibilities

In France

In France the two indispensable conditions for practising as an architect are to have insurance and to be a member of the professional body. Architects are legally liable for any work they undertake, including mere consultation. They remain liable for 10 years for any flaws or latent defects affecting the soundness of the building. In addition, they are subject to third-party liability for any accidents or damage that they are deemed responsible for. Insurance in respect of construction is mandatory and the professional body is particularly keen to ensure that the law is complied with.

In Italy

In Italy it is the building contractor and the building work supervisor together who have main liability vis-à-vis the client, if there are proven flaws or defects in construction. The designers are usually the contract holders of an "intellectual services" contract, which means that they are only liable for damage due to criminal deception or serious negligence on their part. In Italy none of the existing professional insurance policies for building contractors and architects in Italy are mandatory.

3. Other parties involved in the project management

In both France and Italy designers are often part of multidisciplinary teams working on the projects with the aid of design and consultancy bureaux specializing in such fields as structures, electricity, fluids and acoustics.

C. Construction companies

1. General introduction

In France

Construction companies tend to be either very small-scale businesses or extremely large concerns (there are 16 companies employing more than 2,000 persons), whereas there are virtually no medium-size companies. In 1990, there were 311 French companies with building as their main line of business, employing 1.3 million persons. Seven of the companies are among the 20 leading building concerns in Europe, with Bouygues being the number one. However, the vast majority of building and public works companies employ fewer than 10 persons. They make up 94 per cent of all construction companies, but account for only 47 per cent of the turnover. Seventy-six per cent of the building and public works companies' activities involve construction, mostly in the housing sector. The profession of building contractor is highly structured. The National Building Federation brings together virtually all the entities involved, or 304,000 companies, and the Confederation of Artisans and Small Building Companies (CAPEB) is the main professional body for the

handicrafts sector (handicraft companies means those employing fewer than 10 persons). Seventy per cent of the work carried out by craftsmen and small-scale building companies is renovation work.

In Italy

In Italy building companies are rather scattered. In 1990 there were 495,000 of them employing 1.9 million persons. Small- and medium-scale companies employing up to 20 persons account for more than 90 per cent of the total turnover. These companies are principally involved in the construction of housing and non-structural work. By contrast, the companies with a staff of above average size are involved in the public works sector and in non-housing construction.

There are three types of companies:

- Private companies for which the most representative association is ANCE (National Association of Building Companies);
- Public sector companies, of which the largest is IRITECNA occupying tenth place in the ranking of European business groups;
- Cooperatives.

2. Liability and insurance

In both countries the construction company is subject to a 10-year period of liability in respect of the client or subsequent owners for any "serious defects".

In France there is also the two-year guarantee in respect of any faults causing the component parts to malfunction.

In Italy, there is a virtual two-year guarantee for flaws not counted as "serious defects". In Italy there is no compulsory insurance for the client, the builders, the architects or the project managers, whereas in France there is mandatory insurance for construction work.

D. Manufacturers

Despite their large economic and structural role, manufacturers have for a long time been relegated to the status of mere suppliers both in France and in Italy. However, they are seen more and more as genuine partners and there has been increased cooperation with designers, often right from the stage of design. Manufacturers have realized the creative role played by client specifications in promoting improvements in quality and innovative policies. They have introduced new research and development facilities and in certain cases have set up special production lines even for a small number of components. The pair - architect and manufacturer - has become the catalytic force needed to develop new types of construction by which to achieve an architectural goal in the technically and economically most effective way and thereby to improve the price-quality ratio. By working together they are doing away with the old rules and habits which still all too often force companies to choose products and techniques on strictly price-related grounds.

In France, customer specifications are very much on the increase with clients themselves suggesting products. This also applies in the case of social housing, where the National Association of Social Housing Clients (UNFOHLM) has drawn up its own product catalogue.

E. Technical and administrative supervision

In France

The activities of the technical supervisor are central to the quality of the construction work. In France the technical supervisor's role is defined by law: "The technical supervisor's task is to help prevent the various technical hazards liable to a rise in the course of construction work. He may step in at the request of the client to give his opinion on any problem of a technical nature. His opinion will be particularly concerned with the soundness of the construction and with the individual's safety." Technical supervisors (individuals or corporate bodies) must be accredited by the Ministry of Equipment and Housing. It is the client's responsibility to ensure that the supervisor's observations are acted upon. He is liable in respect of the task assigned to him and for this purpose he must take out compulsory insurance. He is expressly forbidden to undertake activities involving design, project execution or consultancy. He is not allowed to produce drawings or draw up job specifications or calculation sheets. The technical supervisor is involved in all stages of a project right from the design stage.

Apart from cases where technical supervision is compulsory (for example, establishments receiving the public), it is up to the client to evaluate whether he needs the services of a technical supervisor or not, although he will be aware that insurance companies offer reduced premiums for constructions which have undergone technical inspections.

In Italy

In Italy the role of supervisors is laid down by the Civil Code and involves three types of task:

Administrative supervision

The supervisor has a dual technical/administrative role, usually after the building work has been completed. He checks the technical documents, carries out any tests he deems necessary, checks the accounts and establishes how much the client is to pay to the company to settle the balance on all the accounts. The supervisor must also check that the staff insurance obligations have been satisfied and take note of any accidents that took place in the course of operations. The supervisor is called in when the work is a subsidized project or involves assisted financing, whereas in the private sector this type of inspection is optional. The supervisor may be either a registered architect, an engineer or a civil servant. He is selected by the administration financing the project in question.

Stability inspection

This type of inspection concerns the structure of the building and is carried out on all buildings constructed with reinforced concrete, prestressed

concrete, prefabricated concrete or metal structures. The task of the inspector is to check the stability calculations. The inspection is made by an engineer or an architect who has been professionally enrolled for 10 years, regardless of the party responsible for carrying out and managing the project in question.

Utilities inspection

For all buildings, the law requires the utilities (water, electricity, gas, etc.) to be checked to ensure that they comply with standards and function properly. The inspection is carried out by the company itself or by someone suitably qualified, and involves the issue of a certificate confirming that the utilities are up to standard and work smoothly.

VI. HOW A CONSTRUCTION PROJECT IS CONDUCTED

A. Inception of a project

The procedures described below relate specifically to a social housing construction project launched by a public client.

1. Initiating the operation

In France

The inception of a project is where the construction process really begins. It starts with initial ideas on the project and ends when the companies are selected on the submission of the finance dossier. In the case of social housing, the initiation of the operation is 80 per cent due to the communal authorities who act through the intermediary of the social housing organizations and under programmes targeted at the most disadvantaged sections of society. This system allows local authorities to take global decisions and to put social development and integration activities into effect. These programmes take the form of agreements between the State and the local authorities setting out priorities and defining local social housing policy. An example of this would be to put down a neighbourhood under the neighbourhood development scheme; this involves, under a three-year contract between the State and the region, implementing a renovation programme which incorporates building schemes and welfare activities.

In Italy

It is the regional authorities who are responsible for initiating operations. On the basis of the budget allocated to them and generally in agreement with the communes and the social housing clients, the regional authorities draw up social housing programmes in the light of needs and assign their priorities: renovation, new buildings, purchase of land for low-cost housing, or "integrated programmes" (on the initiative of a commune or a private client, these are projects covering several objectives such as combination of public and private funding, coordinated building of housing and amenities or merging of renovation with new building). At the time of setting out its programme defining the site of the project, the regional authorities also specify the budget and the number of dwellings.

2. Feasibility studies

In France

The main elements of a feasibility study are: the town planning certificate which confirms that the land may be built on, an analysis of needs, market research, budget estimates for operations, cost estimates (land, planning, taxes and levies, building costs, fees, insurance etc.). On the basis of this study the client defines the objectives and gives an opinion on the launching of the operation. The public client may in fact reject a project, if it does not prove feasible, particularly on economic grounds.

In Italy

The social housing organizations have their budget before the operation is launched. The feasibility studies involve, in their case, locating the land earmarked by the commune, and assessing how many dwellings are needed. This stage is concluded by the client and the commune signing an agreement which specifies the price of the land and its installations. The IACP technical services then carry out a series of studies on the characteristics of the ground and on any town planning or other restrictions. They then draw up a draft programme and a financial estimate on the basis of which the cost of the project can be compared with the reference price which all subsidized programmes must adhere to. It is very rare for a social housing organization to decline a project allocated to it and it will take all necessary steps to ensure the feasibility of the operation.

3. Management of land

In France

The land is bought at market prices. In the case of projects put forward by a commune, land often comes under a building lease which means that it is virtually free of charge.

Communes may designate "concessional development zones" in order to prevent land prices from rising and "land intervention zones" with a right of pre-emption on any property offered for sale whether built or not.

In Italy

In general, land for building social housing is set aside in the commune land utilization plan under "social housing programmes". If a compulsory purchase procedure has to be initiated, the price currently applied is the market price, since the law which allowed towns to buy back land at agricultural land prices was declared to be unconstitutional. This curb on available land obviously affected the building of social housing. Land is leased to the social housing organizations with a 99-year building lease. Communes have access to funds for purchasing land so as to build up a land reserve intended for social housing.

4. Regulations

In France

All the town planning restrictions are contained in the town planning code. The main regulations governing town planning are:

- The guidelines on property development and town planning (SDAU);
- The land utilization plan (POS);
- The local facilities charge;
- The legal ceiling on building density.

Town planning schemes take the form of guidelines and land utilization plans. All towns of more than 10,000 inhabitants must have the guideline on property development and town planning which is a general policy document. The details are worked out using the land utilization plan. Any commune with an SDAU is obliged to draw up a land utilization plan, which is a key element in local town planning. Among other things, the plan covers:

- The protection of natural areas;
- The organization of the location of and access to the constructions;
- The provision of sites for facilities.

The land utilization plan includes the plot ratio (COS) which is a unit of measurement of the density of construction (for example, a ratio of two over an area of 3,000 m² means that no more than 6,000 m² of floor area may be built beyond the building). The plot ratio varies according to the intended use of the construction.

The town planning code contains three taxes:

- A charge for exceeding the legal density ceiling, which is set at three for Paris;
- The excess density charge, if the plot ratio is exceeded;
- The local facilities charge which the municipality charges persons applying for building permits. It is used to finance the facilities needed for town planning.

In Italy

The characteristic feature of the Italian system of regulations is the attempt to balance central power and regional authority and the very sharp contractual division between public and private works.

The State lays down guidelines for town planning and social housing, which are then adapted regionally. On the basis of the regional directives, the communes undertake the drawing up of town planning schemes and their implementation. Furthermore, each one draws up its own building regulations incorporating the minimum requirements stipulated by the State.

Town planning is controlled in two ways:

- By the global development plan which is a broad outline for developing the commune; and
- By the detailed development plans which, on the basis of the global development plan, specify fairly exactly the density and the land which may be built on, the types of buildings, the infrastructure etc. The requirements may relate to visual aspects, the look of the façades and sometimes even the materials to be used.

5. The programme

In France

After establishing the feasibility of the project, it is up to the client to devise a programme for it. The programme must set out both the quantitative and the qualitative aims to be achieved, as well as all the special features of the project. A clear and precise programme is likely to make for a more efficient working relationship with the project manager.

In Italy

The programme is effectively the launching of the project. Once the project has been approved, the region provides three per cent of the allocated appropriations and the client then has 10 months to see that the work is started. The programme consists of outline proposals and a technical and economic specification of the project.

6. The relationship between the client, the project manager and the construction companies

In France

The process of construction involves three parties: the client, the project manager and the construction companies. The latter two are linked contractually and separately to the client. In the majority of projects, there is no contractual link between the project manager and the construction companies.

In Italy

The IACPs are unusual in having integrated technical services. The IACPs are expected to arrange for the design and to decide how the companies are to be selected. Depending on the procedure chosen, a certain amount of work connected with the design will be transferred to the company.

7. Reference price

In France

A social housing project may only be implemented if it costs less than the reference price. This price includes the cost of the land, the price of the building and the fees. The reference price is set by ministerial order according to the type of operation (new building, purchase, improvement etc.),

the type of building (block of flats or detached house) and the type of dwelling. It also sets the limit for the costing of the project and the basis for State subsidies and the preferential rate loan (see Financing of Housing).

In Italy

The upper price limit is fixed by Decree from the Minister for Public Works. The Decree is implemented by the regional authorities, although they reserve the right to adapt it to local circumstances. The Decree sets the maximum price for a subsidized housing project and the credit limit for assisted housing. This price varies according to whether the project involves new construction, renovation or exceptional maintenance work. The ceiling price also defines certain specifications for social housing, such as the area of car parks and the proportion of living area to non-living area (cellar space, passageways, entrances, etc.).

8. Structure of project costs

In France

The houses built by social housing organizations are financed:

- By State subsidies (about 12 per cent of the cost of the project);
- By reduced rate loans over 32 years, which cover about 82 per cent;
- By additional inputs (from companies in the form of the one per cent levy or by local authorities) and by their own resources. The costs of a social housing project normally break down as follows:
 - Land charges: 10 to 15 per cent;
 - Building operations: 70 to 80 per cent;
 - Fees and miscellaneous costs: 10 to 13 per cent.

In Italy

The cost of a project breaks down as follows:

- Construction costs: about 67 per cent (20 per cent for the foundations and 46 per cent for the building);
- Additional fees: 33 per cent (technical costs, ground tests, fitting out the site and contingencies).

However, there is no financing programme covering both construction costs and management and maintenance costs. This is implicitly included in the invitation to tender procedure whereby the best technical bid offering the same price is selected.

B. Design

1. Choice of designer

In France

In the case of public contracts, the designer is selected on the basis of a competition. These competitions which are governed by regulations and compulsory in nature, are closely monitored by the interministerial mission on the quality of public works, which sets out the rules and established practices for them. There are three procedures which vary according to the size of the project. In the case of private contracts, the way the contract is awarded depends on the client and competitions are rare.

In Italy

In contrast to existing French regulations on public contracts, in Italy architects are appointed on the basis of a freely-negotiated contract. Architectural competitions are not compulsory, although there are regulations governing them.

2. Design stages

The stages in drawing up a project are in essence very similar in France and Italy. In general, the designer first outlines initial proposals setting forth the layout, dimensions involved and the overall costs on the basis of preliminary sketches. In Italy this preliminary phase takes the form of detailed town-planning schemes. This is followed by a more detailed draft specifying the technical specialists required for the work. Once the building permit is obtained, the designer or a design office produces the working drawings, which include all the diagrams for the project, including the structural and decorative details. A detailed specification stipulates the construction methods and materials to be used. Together with a file containing the technical and administrative conditions, most of the documents at the working drawings stage are included in the pre-contract documents.

3. Building permit

In France

An application for a building permit must be made for any new construction as well as for work carried out on existing structure, when this involves changing the original purpose of the building, or altering the façade on the outside, or the overall size, or adding new stories. Private individuals may apply for a permit for constructions under 178 m² in area, whereas for those with a larger area the application must be signed by an architect. On the basis of a detailed preliminary design, the project manager prepares a building permit application which he submits at the town hall on behalf of the client following the standard format stipulated in the town planning code. The time-limit for the application to be examined is three months. If no reply is received within the legal time-limit, permission is deemed to have been granted.

In Italy

Applications for building permits must be submitted for all building or improvement work, except for minor interior jobs in which case the commune merely needs to be informed. The application, which is signed both by the client and the author of the project, is addressed to the mayor and submitted to the municipal office. The reply is given after the application has been examined by the relevant municipal departments and a consultative committee has given its opinion. The examination period is two months and if no reply is forthcoming, permission is deemed to have been refused.

4. Regulations governing the project

In both Italy and France, the project design is linked to a series of restrictions, particularly in the case of low-cost housing. The requirements mostly relate to:

- The surface area of the dwellings;
- Compliance with construction specifications;
- Standards in respect of lighting, acoustics, heating and ventilation;
- Fire protection;
- Disabled access;
- Parking (number of parking spaces to be planned).

C. Choice of techniques

This section* aims to compare French and Italian construction methods used for social housing. It was written on the basis of a sample of experimental projects, which, although significant, does not claim to be exhaustive.

1. Carcass and structure

In France

In most cases the main structural principle applied involves walls and flooring cast on site. This method of construction is very suitable for the network of small- and medium-sized companies which have the appropriate shuttering and hoisting equipment and whose relatively unskilled workforce restricts or rules out the use of techniques or applications entailing risk of poor quality (brick work, for example). This construction technique uses a lot of low added value materials (aggregate plus cement or ready-to-use concrete). On the other hand, it does require sophisticated equipment (table forms, moulds, etc.).

* Text drawn up on the basis of a study carried out by M. Martin and M. Cochet from the BETREC Project Consultancy Office at the request of the Construction and Architectural Plan under the EUROREX Programme.

Prefabricated products are also used for the same purposes (prefab walls, prefab flooring), although less often since the projects are most often medium sized (an average contract being for fewer than 30 dwellings). As a rule, prefabricated units are only used when dictated by considerations of time or when the architectural requirements need many copies of an item which would be too complex to reproduce reliably on site. In most cases, the financial constraints on social housing rule out prefabricated units.

As a variation of the on-site wall or floor casting, floors are often partially prefabricated with preslabs, which are widely used to avoid shuttering.

In addition, front walls are often made of plaster cement blocks when the load-bearing grid is perpendicular to them.

In Italy

In 90 per cent of the cases observed the general structural principle involves posts and beams in reinforced concrete cast on site with joist and slab floors and vertical brickwork filling. This method of construction is suited to the Italian small- and medium-sized companies with little in the way of hoisting equipment, but a skilled workforce. This method takes more time, but it suits the Italian system of financing social housing, which is based on subsidies rather than loans. There is widespread use of standard types of bricks, slabs and joists.

Although the widespread use of the post and beam system is in part due to economic reasons relating to the companies concerned, distribution network and size of the projects, there is undeniably a significant cultural factor at work too, namely that the Italians prefer houses built of prestige materials such as brick. There was considerable experimentation with the "traditional" system of reinforced concrete posts and beams in the 1960s, which made it possible to combine industrial building using modular components with assemblages of elements.

Furthermore, this system has clearly stood the test of time and makes it possible to use reliable and durable finishing products, such as tiles. In terms of overall cost analysis, taking all trades into consideration, this system is very sound.

Prefabrication is not cost-effective given the size of projects in small- and medium-size towns (10 to 40 dwellings), although certain complete prefabricated systems are used in large-scale projects involving over 100 dwellings. This type of prefabrication basically follows the post and beam system. It combines modular flooring components with prefabricated walls involving an insulating web between two reinforced concrete facings.

Since this system is only used for large-scale projects and in large built-up areas, it is not on the increase and is of negligible significance for social housing.

The system of load-bearing walls and concrete flooring cast on site is not widely practised, except by large business set-ups with large-scale contracts to complete in short time-limits.

2. Framing work and roofing

In France

The framing work in France is quite separate from the carcass work, and basically involves products made of solid timber, glued laminated timber or factory-produced frames made of stapled timber. The commonest method these days is the timber frame which has gradually replaced the traditional system of solid timber trusses.

If the space under the roof is to be used as living space, a system of wall-to-wall purlins is often used, given how common load-bearing shear wall structures are. With this system the shear wall runs along at roof level and supports the purlins.

In Italy

In Italy the commonest method is to use an actual sloping panel: a joist and slab panel running from the eaves purlin to the ridge purlin and the hip rafters. These elements themselves are made of reinforced concrete beams supported by the structural posts.

Timber framing or mixed timber/concrete framing as well as steel framing are, in any case, little used.

The Italian framing work is, therefore, closely linked to the carcass, since it tends to be a continuation of the system of posts and beams and of joist and slab floors of the underlying structure. None the less, it remains the work of the carpenter who also makes on site all the moulds needed for the concrete cast in situ. The term carpenter also covers the work of the French framework setter ("coffreux").

3. External joinery and blinds

In France

There are basically two materials used for external joinery in French social housing: wood and PVC. Older buildings have mostly timber joinery, but there has been a pronounced shift towards PVC which has been replacing timber and costs about the same price. However, wood is still used for projects small enough to be handled by local joinerys, but too small to be of interest to PVC distributors. The use of PVC avoids maintenance problems. In the case of top-of-the-range properties for sale, aluminium is generally used rather than PVC.

A lot of the older houses had metal blinds made of painted steel, but these have gradually been replaced with PVC. Currently PVC window units with built-in rolling shutters are making considerable headway. Very few projects involve side-hung wooden shutters.

In Italy

Four main materials are used in the external joinery of low-cost housing in Italy: wood, steel, PVC and aluminium. Formerly the most common materials used in joinery were painted steel and varnished wood, which have nowadays

given way to products such as PVC and aluminium. This change has come about not only as a result of maintenance problems with wood and condensation problems with steel, but also due to the extensive market success of PVC for economic reasons.

Blinds most frequently take the form of rolling shutters made of a metal alloy or wood, although there is a new trend to opt for PVC rolling shutters as part of an all-in-one window casing unit.

4. Floor finishing

In France

Given how much these finishings cost, nowadays only entrance halls are given hard floors (usually ceramic tiles). In France, a hard floor is a sign of a property's standing. When the overall cost of projects is borne in mind, it tends to show that fitting hard floors, at least in damp rooms, is of benefit to the operator in the long term. Individual dwellings are very rarely tiled. Most commonly the floors in rented accommodation are given a thermo-plastic finishing. In rented accommodation carpets are often laid, especially in bedrooms, and in property for sale this is standard practice.

In Italy

In contrast to France, in Italy all floor finishings, whether they be in rented accommodation or property for sale, are of the hard type (ceramic tiles or terrazzo). Only slight differences in the quality of the products used will distinguish the standing of the property. This is a real Italian tradition found in virtually all building projects. The communal areas usually have a marble, ceramic tile or terrazzo finishing laid over a bed of mortar on a damp proofing course or sand bed. The communal areas are never fitted with soft floors. The skirting is made of marble, or failing this, tiles, and steps on the staircases are often done in marble or terrazzo.

The floors in the individual dwellings are usually covered in single-fired or ceramic tiles or in terrazzo. Bedrooms sometimes have wooden floors, but this is a luxury version used by cooperatives when upgrading the buildings.

The kitchens usually have ceramic or marble skirting, whereas wood and plastic are used in the other rooms. Fabric or PVC coverings are rarely employed, since they are unpopular with consumers.

Balconies and patios are often covered in red sandstone or single-fired tiles, which are intended to be decorative. Balconies are rarely left without a finish.

5. Wall finishings

In France

Wall and ceiling finishings are rather varied, as unfortunately is their quality, which may undermine the aim of optimizing overall costs, particularly for the communal areas. However, when it comes to the interiors of the buildings, this variety is a plus point.

Discussions on overall costs are currently under way in order to reassess the quality of the products used on the communal areas and on the areas most prone to wear and tear inside the dwellings (living rooms and halls).

In Italy

Wall and ceiling finishings nearly always take the form of washable paint, which provides considerable durability not only for the communal areas, but also for the individual dwellings. The disadvantage of this is that there is a certain monotony either in the communal areas or inside the dwellings.

D. Consultations with companies

In France

Consultations with companies are mandatory for works over a certain value in the case of public contracts only.

In Italy

The type of contract is determined by the type of client. Public clients responsible for social housing (IACPs) and the communes are obliged to undertake pre-contract negotiations.

(a) Consultation file

In France

Company consultation file refers to regulatory documents which are not attached to the tender, but which all the companies are expected to be familiar with:

- The public contract code;
- The standard specifications of the contract, which take the form of so-called Standard Technical Documents (DTU) for the building. The Standard Technical Documents specify a code of practice for each trade as regards techniques and the use of materials (see technical regulations).

The file includes various written documents and components of the project at the detailed initial design stage, as well as all or some of the working drawings. The client may or may not specify a price limit.

In Italy

Companies submit offers on the basis of a file containing the master specification, a detailed initial design, working drawings (which usually only cover the architectural description, since the structure and the installations are delegated to the company), unit price schedules, and sometimes a quantity survey and detailed specification.

(b) Company's eligibility criteria

In France

In order to be entitled to put in a tender, a company must satisfy certain conditions, in particular:

- References and suitable technical competence;
- Proof that it has the required insurance coverage;
- Not being in receivership;
- Proof that it has complied with its tax and social security obligations.

Companies may be temporarily or permanently excluded for not having handled previous contracts adequately.

There is no official list of companies available to receive a request for quotation, although some guidance may be provided by consulting the authorities' lists which identify and classify companies.

In Italy

For all public contracts over a certain value, the companies must be on the national register of construction companies, which classifies the companies on the basis of the contract size and the type of work. Registration is subject to submission of a file with economic, financial and technical references. In addition, the company is obliged to provide security in the form of a bank guarantee or insurance equivalent to five or 10 per cent of the value of the contract.

(c) Forms of consultation

The publication of invitations to tender is compulsory in both countries, with differences in procedures relating to the value of the contract and the type of consultation. The client must also make it known in the same publications as those used for advertising.

In France

For public clients the company selection procedure is regulated by the public contract code, which specifies three main procedures:

- Public tendering, or a procedure in which the competition entails the price alone;
- Invitation to tender, whereby the contract is awarded to the bid considered "most interesting" in terms of a set of criteria stipulated in the code: price, running costs of the building, technical work, deadlines, and professional and financial guarantees;

- Negotiated contracts, whereby the client freely negotiates the contract with the company which is to carry out the work. This procedure may only be used for very small public contracts and under special circumstances.

In addition, when special research is required for technical, aesthetic or financial reasons, the public client may opt for the so-called design-and-construction competitive tendering procedure, which brings the architect and the company together, since it concerns both the design and the building work. The designer and the company jointly submit a project and their price to the client.

In Italy

For the public client, the financing of the project has already been completed at the time of selection of the companies (the basic price is stated in the call for tenders). There are various forms of pre-contract negotiations:

- The open procedure, which has virtually been abandoned;
- The restricted procedure, whereby the client may preselect the companies to be invited to tender;
- The invitation to bid on the basis of a "guideline project" (a project at the outline proposal stage and a programme setting out all the client's objectives and constraints), which enables companies to be consulted on the design and implementation of the project. It is then up to the company to choose the architect. This procedure is quite common and is used when the project has specific innovative technical requirements. The procedure enables the company to take advantage of know-how, whereas with traditional procedures only the price counts;
- Restricted invitation to tender with price and quality bids, put out on the basis of a specific architectural project, but open with regard to the technical means and choice of materials. This is the most commonly used procedure;
- Invitation to tender plus a competition, similar to the French design-and-construction procedure, whereby the company must put in a bid in conjunction with an architect. Given the lack of interest shown in this by companies, the procedure has been virtually abandoned;
- Negotiated contract used for small amounts of money, emergency cases, for unsuccessful invitations to tender, and for experimental projects;
- In Italy there is also a procedure for awarding construction and management, whereby the contractor is given the management of the project in return for completing the work. This is intended to speed up the construction of public works.

E. The building work

1. Site organization

In both France and Italy, the site organization is the joint responsibility of the company and the design team. The design team coordinates all the activities involved and draws up the detail chart known as the planning schedule. The company organizes the actual building, selects the technical methods and draws up plans. At the same time there must be financial planning to enable the client to establish the amounts of money to be paid to the company while the work is in progress. The company and the project manager draw up a plan for on-site installations, which, among other things, enables them to provide for the required equipment, facilities and health and safety installations. The two main administrative formalities are the site start-up notification and the construction site notice-board indicating the whereabouts of all the parties involved.

2. Health and safety

The client and the project manager are liable to penalties if they do not comply with health and safety regulations. In France, for contracts over a certain value and when there are more than 100 workers at the building site, companies are obliged to draw up a health and safety plan. In Italy, under the anti-Mafia law, the successful bidder is obliged to complete a certain number of formalities. Any work subcontracted must be approved by the authorities. In addition, the company must provide the client with proof that both it and its subcontractors are complying with the social security, insurance funds and safety obligations for their workers. The company must also submit a site safety plan.

The content of the regulations on site safety are closely related to the methods of construction. In Italy the commonest method involves a post and beam structure with slab and joist floors and brick infill. This construction technique does away with any heavy-duty handling or tower cranes or similar equipment, and therefore reduces the number of safety precautions required when using and setting up the site. On the other hand, the post and beam system requires a lot of scaffolding. Another key factor is the deadline for completion. Completion time is longer in Italy, which means that there are fewer men on the site and fewer jobs being done at the same time. These facts have a crucial effect in terms of workstations protecting each other as well as on the size of the installations and risk reduction and therefore safety precautions. In France, the fact that the equipment used on site has become more important than the actual skill of the workforce has made the introduction of stricter regulations necessary. In Italy, builders are still considered to be craftsmen, which explains the differences between the two countries in terms of on-site installations and safety precautions.

F. Maintenance and management of the rented accommodation

1. Allocation of dwellings

In France

In accordance with the construction and housing code, social housing is reserved for people on a low income. The allocation terms depend on the type

of financing of the housing. Applications for dwellings are submitted either to the social housing organizations or to the commune where the housing is situated. The tenants have security of tenure, even if their income or family circumstances change.

In Italy

In Italy there are considerable differences between the regions and each region may fix its own allocation criteria, including the income limits. Different types of family are given priority for different types of housing. Citizens of an EC country are the only ones to have the same entitlements as Italians. The sharing of his responsibilities between allocation, construction and management is a problem area for the client. Because of this it is common for delays in finalizing the waiting list to lead to time lags between the dwellings being approved for habitation and tenants moving in. Permanent tenure is normally guaranteed, but a rental supplement is charged when the income of the household exceeds the ceiling income for eligibility for low-cost housing for two consecutive years.

The French system has the advantage over the Italian system as it provides the organizations with a closer link between the planning of projects and the allocation of the housing, since the funding is directly tied in with the target families. On the other hand, the opportunity to use several sources of finance makes for a more varied social mix.

3. The rents

In France

Fixing the level of rent is a key issue for the public client when planning his activities. Planning is based on the concept of a "balancing rent". The rent is intended to balance the investments (past and present) in the project and also to cover the major repair fund and possibly also the management costs.

Tenants with an income below the ceiling are entitled to a monthly subsidy, which means that the State covers the difference between the tenant's ability to pay and the actual amount of the rent. The cost to the household represents between 10 and 26 per cent of its income depending on the type of housing.

In Italy

Rent plays no decisive role when launching a social housing project. In fact, the criteria for fixing the level of rent have no bearing on balancing the books at all. The level of rent is calculated according to the family's income. The difference between the tenant's solvency and the actual amount of the rent must be covered by the client, which leads to serious management and maintenance problems in the social housing sector. In 1991 the cost to tenants living in IACP housing represented eight per cent of their income, as opposed to 20 per cent in the private sector.

4. Renovation and maintenance

Both French social housing with its 3.3 million units and Italian social housing with its one million units are faced with the problem of adapting this

resource and maintaining it so that it meets tenants' expectations. In this context, renovation plays a key role in both countries.

As in Italy, public clients dealing with social housing in France receive State subsidies to cover renovation, but not for the management and maintenance of social housing.

In France for major repairs involving considerable work, the managerial body sets a certain amount aside each year (at least six per cent of the real estate value of the property).

In Italy, the low rents make maintenance rather difficult and do not suffice for any funds to be set aside for major repairs. The only way to finance exceptional repair work is to sell some of the dwellings.

VII. THE KEY POINTS

1. Carrying out a construction project brings many different parties into play, from the financiers, to the client, including the architect, the project consultancy bureau, construction companies and manufacturers and not forgetting the technical supervisor. As the building process gradually becomes more complex and equipment diversifies and becomes more sophisticated, so the number of parties involved also increases. It is crucial to define their respective roles and responsibilities. Lastly, the introduction of technical inspections may well play a decisive role in respect of the quality of construction work.
2. Political will is needed to establish special financing mechanisms and a body of regulations governing social housing (constraints regarding quality, surface area, town planning as well as technical specifications) for the purpose of developing coherent housing programmes for the most disadvantaged segments of society. The regulations may vary according to the type of financing and the type of project (new building or renovation; for rent or for sale).
3. The social rented housing sector and the private ownership sector are complementary. In France, social housing was for a long time exclusively for rental purposes, but owner-occupier programmes have been gradually on the increase. In Italy, both due to the mode of financing and to the structure of the building trade (the role played by cooperatives and construction companies) the social housing sector is particularly dynamic. The public clients concentrate on low-cost rented accommodation, whereas private clients run property for sale programmes.
4. Both in France and Italy, the rented sector has lost the flexibility which 10 or 20 years ago allowed it to fulfil its welfare housing objective. Household mobility, which should be at least 10 per cent per year (in other words one person in 10 moving house every year), has gone down to 3.4 per cent in France and even less in Italy. This situation is almost as static as if the tenants owned their own home.

5. Introducing competition between construction companies leads to cost reduction. Whereas companies were once selected purely on the basis of price, there is an increasing preference for pre-contract negotiations (consultations) that take into account the quality of the services and the "global cost", including maintenance costs for the buildings.
6. The choice of building techniques is normally up to the designer (the architect in France), but the company often contributes its own know-how in responding to invitations to tender and later on when the working documents are drawn up. In addition, clients themselves impose certain choices and demand a certain level of performance and quality.
7. Technical regulations were originally designed to guarantee the safety of the tenants. The regulations are usually based on standards, but they represent in fact an extension of established standards, since the standards were originally a contract document drawn up by all the parties concerned (buyers and sellers of goods and services). This idea has been incorporated into the European directive on the "new approach" to the idea of quality. Standards should be restricted to the characteristic of suitability for use and not be concerned with product description. Standards should specify performance criteria rather than descriptive ones.
8. Building regulations are often extremely important in industrial countries, because they have been drawn up gradually with continual improvements, but they must be such that they can be complied with. Furthermore, it is vital to introduce suitable inspection techniques. It would serve no purpose to specify constraints that are too far from reality and beyond the capabilities of manufacturers, since it would then be out of the question to enforce compliance with such regulations.





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SOCIAL HOUSING POLICY IN TUNISIA 1956-1992*

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* The opinions expressed in this document are those of the author and do not necessarily reflect those of the UNIDO Secretariat. This document has not been edited.

** Director General of CTMCCV.

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PREFACE

This report has been drawn up at the request of the United Nations Industrial Development Organization (UNIDO). The objectives of the study are as follows:

- To give an account of the specific results obtained by a developing country in the area of construction, more especially social housing construction; and
- To identify the Tunisian initiatives which have led to the success of the housing policy in Tunisia.

The report places emphasis on the social housing promotion policy and the part played by the private and public sectors as well as the action taken by the Government to encourage it.

INTRODUCTION

The study is aimed at identifying the key elements in Tunisian housing policy. The main idea is to bring out the way in which, since independence, Tunisia has sought to adapt its housing policy, more especially social housing, to enable the country to meet the needs of the population as adequately as possible.

The policy has been systematically supported by specialized institutions, sometimes concentrated and sometimes disparate. It has mobilized all the Tunisian parties concerned, whether building professionals or households, both in the formal and informal sectors. It has made use of all the regulatory resources, financial organizations and all other possible back-up structures. All these components have helped to promote social housing and the development of the housing stock intended for citizens with low incomes.

Since independence, the development of this sector has been marked by three stages, which are examined separately and which constitute different sections in this study.

- I. 1956-1974: the National Real Estate Company of Tunisia;
- II. 1975-1985: the proliferation of housing organizations;
- III. 1982-1991: the contribution by the private sector.

I. 1956-1974: THE NATIONAL REAL ESTATE COMPANY OF TUNISIA (SNIT)

Following independence, Tunisia found itself facing an arduous, but exciting task, namely to promote the construction of housing and to ease the crisis which prevailed in that domaine. The task of the first independent Government was essentially a social one and was intended to improve the standard of living of the poorer people and to enable them to have decent housing. To achieve this goal the State set up the National Real Estate Company of Tunisia (SNIT) on 10 September 1957, by passing Law No. 57-19 (Official Gazette No. 15 of 13 September 1957).

SNIT is a commercial company governed by the legislation covering limited companies. In June 1959, following dissolution of the Tunisian Land Ownership Fund, the State entrusted SNIT with recovering the building loans granted by the Fund. The same year, the State authorized SNIT to offer real estate that was in the private domain of the State to reliable tenants under the hire purchase system. From 1 July 1959, SNIT took over control of the implementation of the SCOL (Workers' Housing Cooperative Companies) programmes as well as the management of the relevant recovery. In 1961 the Tunisian Mutual Fund (CMCIT) was dissolved and its portfolio transferred to SNIT.

A. Objectives

Since it was first set up, the role of SNIT has been defined as follows:

- (a) To carry out real estate operations both on its own account and for the State or public communities;
- (b) To undertake construction programmes or take a financial part in such operations in the area of workers' housing;
- (c) To manage the real estate entrusted to it;
- (d) To serve, if necessary, as a go-between and an inspectorate for the distribution of public funds in the field of construction.

In 1969, SNIT was appointed the sole State operator for social housing subsidized by the Government; this was done with the intention of producing a maximum number of dwellings, more especially low-rent housing.

B. Achievements

Between 1957 and 1974, SNIT constructed 50,567 dwellings. The total investment expenditure amounted to 62,269 million Tunisian dinars.

This period was marked by a concentration of all the activities of the real estate sector in one single organization. This trend was fairly current at that time in the bulk of the economic activities of the majority of countries.

II. 1975-1982: THE PROLIFERATION OF HOUSING ORGANIZATIONS

Despite the achievements of SNIT, as the only public promoter, the results of the 1975 census were an incentive to step up efforts to ease the housing crisis. For example, the law governing real estate promotion, which until then had been dominated by a quasi-monopolistic system entrusted to SNIT, underwent an important change. Starting from 1975, more suitable legislation was passed while, in parallel, new structures were brought into action. Before recalling the efforts deployed by the public promoters from 1975 onwards, we should mention the results of the 1975 census, more especially the existing state of property and the demographic growth rate.

Estimation of requirements on the basis of the 1975 census results

With regard to the existing state of property, it appears that out of a total of 1,005,670 dwellings, 223,000 were found to be insalubrious (sheds, shacks, tents, etc.). In order to replace them an annual construction effort of 11,000 dwellings proved necessary. The 1975 census further showed an average occupation density of 2.77 persons per room. To bring this figure down to 2, it would be necessary to build 13,000 dwellings per year, for the next 20 years. Finally, in view of the average lifetime of permanent dwellings, estimated at the most as one century, it would be necessary to build 7,800 dwellings per year as a form of replacement. Since the annual population growth rate is about 2.3 per cent, the average increase in population can be estimated at 138,000 people/year. As the Tunisian household contains an average of 5.5 persons, the requirements created by the demographic increase are therefore of the order of 25,000 dwellings/year.

Hence the global requirements amounted to 56,800 dwellings per year, distributed as follows:

	<u>Dwellings/year</u>
Replacement of slum dwellings	11 000
Decohabitation	13 000
Replacement of dilapidated property	7 800
Population growth	<u>25 000</u>
Total	56 800

A. National Real Estate Company (SNIT)

The various functions performed in parallel by SNIT, i.e. developer, real estate promoter, real estate manager and financing organization, were separated, starting in 1975, according to their particular vocation. From then on the Company only played the role of real estate promoter. Under the new law its activity was limited to the construction of rural houses and dwellings on behalf of national bodies such as the National Fund for Retirement and Social Welfare (CNRPS) and the National Social Security Fund (CNSS).

B. Other housing organizations

The diversification of the activities of the operators was reflected more specifically by a proliferation of the housing organizations, of which we will mention only the most important:

(a) Social Housing Promotion Company (SPROLS), which concerns itself with the construction of social housing intended for lease for the benefit of the affiliated members of the National Funds (CNPS and CNRPS).

(b) Land Settlement Agency, a body which specializes in making land services available and which was set up to curb the speculation in land. The Agency, whose activities have been crowned with success, has access to diversified and complementary modes of action. First, the legislation grants it the right of pre-emption and expropriation of urbanizable land for public use and, second, it has the advantage of its activities being decentralized and the opportunity of coordinating its functions with other land agencies in such a way as to promote integrated operations within a global and coherent context of economic development (housing, industry, agriculture, tourism, etc.).

(c) National Housing Loan Fund, of which the form of savings has, from the very start, encouraged spontaneous membership by citizens.

C. Accompanying action

To enable these organizations to achieve their housing objectives, certain changes were introduced at the level of organization, regulation and legislation in that field.

The establishment of regional branches of the organizations (SNIT, AFH, CNEL and others) made it easier for a greater number of citizens to have access to decent dwellings and also made it possible to avoid the concentration of housing programmes in the capital and the big cities. Through administrative decentralization it was possible to bring the administration closer to the citizen, especially as regards approval for the parcelling out of plots, receipt of a building permit and the examination of applications for loans and subsidies, and credits from the National Housing Aid Fund (FNAH).

The development of construction and the action taken to promote real estate made it necessary to speed up the administrative procedures with the municipalities, the Ministry of Equipment and Housing and other bodies so that it was easier to acquire dwellings and procure property titles.

The decree of 10 September 1943 governing matters of architecture and town planning was amended so as to make the legislation more effective and to divide up the improvement costs more equitably among the developers and the ultimate beneficiaries in the same chronological order as their participation.

The economic development of the country and the social promotion of the citizenry gave rise to a considerable demand for dwellings both in towns and in rural localities. The decree of 22 July 1943 governing permission to build had become somewhat ineffective and the decree was remodelled under Law 76-34 of 4 February 1976. This law made it possible to extend the scope of the

authorization to build to cover localities that were not communally built up, specified a deadline for the issue of the building permit, guaranteed the rights of citizens through proper methods of redress and strengthened the control of construction by joining up local public communities, legal authorities and police in the lookout for infractions.

The State has always encouraged the construction of dwelling houses by means of subsidies. With this aim in mind a new order was promulgated by which only persons building new dwellings with their own funds could have the benefit of a building subsidy. All these initiatives made it possible to construct an average of more than 40,000 dwellings per year during the Vth Plan (1977-1981).

III. 1982-1991: THE CONTRIBUTION BY THE PRIVATE SECTOR

This decade was marked by a meaningful contribution on the part of the private sector to the housing construction effort in Tunisia. It divides into two periods: the VIth Development Plan (1982-1986) and the VIIth Development Plan (1987-1991). During this decade production was about 500,000 dwellings, or a yearly average of 50,000 units. This increase in supply made for an improvement in the housing construction rate, which rose from 4 dwellings/1,000 inhabitants/year between 1975 and 1981 to 6 dwellings/1,000 inhabitants/year between 1982 and 1991. This rate of construction is clearly above average for the third world countries. Indeed, the average rate for the African countries is currently not more than 3 dwellings/1,000 inhabitants/year (1987 United Nations Yearbook). At a rate of 6 dwellings/1,000 inhabitants/year Tunisia was up among such European countries as France and Germany. The table below shows the trend in housing production during the decade in question.

Table 1

Trend in housing production during the
decade 1982-1991

Period	Public sector				Private sector				Total			
	No.*	%	Inv.**	%	No.*	%	Inv.**	%	No.*	%	Inv.**	%
1982-1986	78	30	540	23	192	70	1 800	77	270	100	2 340	100
1987-1991	65	28	568	23	167	72	1 928	77	232	100	2 496	100
1982-1991	143	29	1 108	23	359	71	3 728	77	502	100	4 836	100

Source: Ministry of Planning.

* Number in thousands of dwellings.

** Investments in millions of dinars.

The table reveals a decline in production which dropped from 54,000 dwellings per year during the VIth Plan to 46,400 under the VIIth Plan. It also shows an increase on the part of the private sector, from 70 per cent during the initial VIth Plan to 72 per cent during the VIIth Plan.

A. Construction of dwellings during the VIIth Plan

The number of dwellings completed during the VIIth Plan is shown in the following table.

Table 2
Completion of dwellings during the VIIth Plan (1987-1991)

Type	1987	1988	1989	1990 Probable	1991 Scheduled	1987- 1991 No.	Percent- ages
Authorized dwellings <u>a/</u>	26 751	23 810	21 456	24 400	27 575	123 992	53.4
Informal dwellings <u>b/</u>	14 449	13 730	17 784	17 700	16 425	80 088	34.5
PNRLR <u>c/</u>	14 000	6 000	3 756	2 400	2 000	28 156	12.1
Total	55 200	43 540	42 996	44 500	46 000	232 236	100

Source: Ministry of Planning.

a/ Estimation of the time for completion: 25 per cent the second year, 50 per cent the third year and 25 per cent the fourth year.

b/ The following studies were used as reference material:

- Study of spontaneous housing in Tunisian districts and towns (1985-1987);
- Survey of irregular housing in eight provinces (Bizerte, Nabeul, Zaghouan, Sfax, Gabès, Kasserine and Tataouine) Min. Equip. and Housing 1990;
- 1984 census and 1989 survey (INS);
- Industrial branches of the National Electricity Company (SONEDE).

c/ The estimate of the dwellings completed under the National Programme for the Reduction of Rudimentary Dwellings (PNRLR) refers to the evaluation conducted in 1988 under UNDP project TUN/87/004, which states that only 40 per cent of the dwellings built can be considered as new creations, the remainder being improvements or extensions of existing houses.

Table 2 shows, furthermore, the importance of the informal sector during the VIIth Plan both in absolute value, since it represents a yearly average of 13,600 dwellings, and in percentage, with the latter amounting to 34.5 per cent of the dwellings constructed during that period.

The investments envisaged and made in the housing sector during the VIIth Plan are shown in the table below.

Table 3

Investment made in the housing sector during the VIIth Plan

Operators	Forecasts		Achievements		Relative discrepancy
	Invest-ments*	Equivalent housing**	Invest-ments*	Equivalent housing**	
SNIT	374	27 385	316	22 000	
Social security organizations	43	2 270	)		
Other public promoters	90	7 545	) 102	13 544	
PNRLR	173	86 300	150	28 156	
Subtotal public	680	123 500	568	63 700	-16%
Private promoters			162	10 050	
Formal self-promotion			1 240	98 900	
Informal self-promotion			534	50 350	
Subtotal private	1 321	136 500	1 935	159 300	47%
TOTAL	2 000	260 000	2 503	223 000	25%

Source: Ministry of Planning.

* Investments in millions of dinars.

** Equivalent housing.

The forecasts materialized to the extent of nearly 90 per cent achieved in terms of housing equivalent, while, conversely, they were overshoot in investment terms, the amount equalling 2,500 million dinars, as against 2,000 million dinars forecast, or a 25 per cent overshoot.

This unforeseen increase in investments is once again due to the private sector which by investing about 1,935 million dinars made up more than 77 per cent of the investments made under the VIth Plan (1982-1986). The public sector only made up 568 million dinars, as against the envisaged 680 million, or 23 per cent of the total investments - a more modest performance than that shown during previous plans.

The effects of the economic crisis observed at the beginning of the VIIth Plan were felt much more by the public sector than by the private sector, especially on account of the decrease in the SNIT land stocks and difficulties in marketing its production of economic housing.

Examination of the results shown per branch of production indicate that it is the controlled branch (SNIT, social security organizations and private promoters) which is most affected by this decline: 30,000 dwellings produced per year as against 40,000 in the preceding plan. SNIT, the principal promoter of real estate in the country, experienced a drop in housing production from 12,000 dwellings/year in the VIth Plan to 4,400 dwellings/year in the VIIth Plan.

The resources mobilized for financing these investments can be divided up as follows:

<u>Origin of funds</u>	<u>Millions of dinars</u>	<u>Percentage</u>
State budget (slum clearance and offices)	180.0	7.2
Housing Bank	266.4	10.6
FOPROLOS	89.6	3.6
CNSS/CNRPS	90.0	3.6
Foreign credits	45.0	1.8
Self-financing of households	<u>1 831.8</u>	<u>73.2</u>
Total	2 502.8	100.0

The above distribution brings to light the major contribution by households, for which self-financing represents more than 73 per cent of the housing financing as a whole during the VIIth Plan. The remainder, or 27 per cent, comprises institutional funding represented by the Housing Bank, FOPROLOS, social security organizations and the State through its budget.

Besides the investment effort which was apparently satisfactory, the trends noted necessitated the adoption of certain measures.

B. Trends

1. Production of buildable land

The production of buildable land necessary for implementing urban housing programmes has remained below what was required. The approved division into plots showed a parcelled surface area of 2,774 hectares, while the actual needs were estimated at 5,000 hectares, hence the recourse to illegal parcelling of urban land. The parcelling covered a total of about 2,826 hectares, or 50.5 per cent of the total, or an annual average of 565 hectares/year. The estimate is based on the need for buildable land in order to complete all the dwellings constructed in the urban milieu, including those of the informal sector, in accordance with the following densities: 26 dwellings/hectare on the approved plots, and 30 dwellings/hectare on the non-parcelled land. The average density of the approved parcelling showed a slight improvement since it rose from 23 dwellings/hectare during the VIth Plan to 26 dwellings/hectare for the first four years of the VIIth Plan.

This densification, still very limited, is basically the work of public parcelling out, especially the Land Settlement Agency (AFH), which completed 892 hectares, or 15 per cent of the total surface area of the plots, and 31 per cent of the surface area of the approved plots. The scarcity of buildable land and the increased cost of land and infrastructure encouraged densification of the plots and the improvement of smaller plots (improved plots), a new product for the AFH, but one in which the production was satisfactory (about 1,500 plots/year), but unsuitable for households with low income because of the costs.

2. Renovation of existing housing

At the beginning of the VIIth Plan, the achievements were as follows:

(a) Activities within the National Housing Improvement Fund (FNAH): improvement of about 3,000 dwellings at a total cost of 14.4 million dinars;

(b) Urban development project (PDU): continuation of the third project and completion of the fourth would have permitted:

- The renovation of 47,400 dwellings (17,500 of which were envisaged under the Special Improvement Project (PSA) for 72 districts);
- Integrated renovation in the true sense, which effected 30,000 dwellings in about 30 communes spread out through the provinces of the country;
- Investments made under the third and fourth urban projects during the VIIth Plan (including the special project) will amount to 54.8 million dinars;
- In the integrated renovation projects, the Highway Maintenance and Service Networks (VRD) represent by far the largest component (69 per cent of the investments), the remainder being devoted to building improvement, communal facilities, land balance and so forth.

Projects	Number of dwellings	Investment in millions of dinars
IIIrd Urban Development Plan (integrated)	9 900	15.8
IIIrd Urban Development Plan (special improvement project)	17 500	13.5
IVth Urban Development Plan	20 000	25.5
FNAH	3 000	14.4
Total	50 400	69.2

3. Geographical distribution and concentration

The dwellings constructed during the VIIth Plan have been of benefit to the coastal regions, more especially the north-east where 40 per cent of the dwellings were completed, corresponding to 42 per cent of the overall investments. In terms of the population, this construction effort represents a yearly rate of 8 dwellings/1,000 inhabitants in the district of Tunis and the east-central area, while it hardly makes 4 dwellings/1,000 inhabitants in the west-central part and 4 dwellings/1,000 inhabitants in the north-east.

As a result there has been a tendency towards the conglomeration of dwellings in the eastern regions of the country (78 per cent of the total dwellings constructed), which is a good indication of the concentration of economic activities and the corresponding investment. Noting more and more that the public promotion programmes (mainly SNIT and AFH) carried out in the western areas have undergone a slump, it can be said that the construction of housing has thus tended to concentrate and has been one of the range of problems occurring in town and country planning.

It seems, furthermore, that housing promotion proceeded faster than the actual demand and that it even acted as a catalyst in the migration to such regions.

4. Unsuitability of production to needs and proliferation of spontaneous housing

Spontaneous housing has made great progress, since the proportion of it has risen from 25 per cent of the total dwellings built under the VIth Plan, to 34 per cent under the VIIth Plan and, if the trend is not controlled, may reach even higher proportions. The factors that have encouraged the proliferation of spontaneous housing are the following:

(a) The concentration of investments in urban areas and the inevitable movement of populations towards the towns in search of employment and better living conditions;

(b) The accentuation of the ensuing demand in the urban areas; this becomes more pronounced in the big cities where it is coupled with the accentuation of the scarcity of buildable land;

(c) The dynamic development of extensive urbanization which has prevailed over the last few years through the promotion, in the majority of cases, of private dwellings which take up a lot of space and which give rise to wastage of land resources;

(d) The unsuitability, above all in the concentration zones, of the official supply of housing, which is simply out of the question for households whose income is below the mean (260 dinars in the towns and 120 dinars in the country). It is essential to mention here that, although spontaneous housing has created for landowners an obvious opportunity for enrichment, for the low-income populations it has been the best solution (flexible terms, short delivery deadlines, adjustable plot size, and so forth) for satisfying housing needs; in other words, it is a one-time solution to an equation difficult to solve.

5. Increase in housing costs

The increase in the cost of housing has been clearly felt over the last few years. For example, between 1980 and 1988 the average cost of an urban dwelling tripled, rising from 4,000 to 12,000 dinars.

An initial analysis of housing production costs, using a sample from SNIT projects, makes it possible to break down the overall cost as follows:

Serviced land:	20 per cent
Materials:	35 per cent
Construction:	25 per cent
Studies and miscellaneous costs:	20 per cent

This shows that the housing production costs depend on several factors tied in with the production price of serviced land, that of the materials and the mode of construction. More detailed analyses may show the impact on these costs of the excessive rise in the cost of land, the standards in use in the area of servicing and construction, the use of materials for which production needs a considerable amount of energy, and control of construction deadlines.

6. Degradation of environment

Massive urbanization has given rise, in addition to the potential losses of agricultural space, to the development of soulless cities without a community life centre, with degraded urban roadways, badly maintained buildings and lacking in architectural style. This deterioration of urban quality is accentuated by the following factors:

(a) Lack of participation by inhabitants in community life and in administration of the districts;

(b) Non-integration between the districts and relationships of conflict between their inhabitants;

(c) Insufficiency and inadequacy of community facilities for the life of the districts;

(d) Non-compliance with architectural and town-planning typology in each region and the lack of local and regional architectural unity.

C. Measures for recovery

To relaunch the housing sector, weakened by the economic crisis of 1986, a series of measures have been adopted since June 1988. The first ones relate to improvement in the efficiency of the public operators and the thrust of their production; the others are more administrative or regulatory measures.

1. Land Settlement Agency (AFH)

The goal of AFH is still to make land available to households at acceptable prices so that they can build their houses there or have them built. These aims are reflected by:

(a) Reduction in the size of the individual plots that it services and their degree of servicing in such a way as to bring this land within reach of the low-income population (improved plots);

(b) Orientation of its activity towards the production of housing blocks with primary services "extra muros" with a view to placing them at the disposal of a variety of developers with a schedule of conditions adapted to the type of dwelling to be built;

(c) Improvement in its methods of management by systematization of market studies and the use of intra- and inter-project equalization;

(d) Preparation of a plan for liquidation of unsold houses (which have attained 205 hectares).

2. National Real Estate Company (SNIT)

SNIT's programme of action covers inter alia:

(a) Specialization of activities such as to accord priority to real estate promotion by individualizing within an autonomous structure (as compared with other functions exercised: town and country planning for its needs as real estate promoter and management of real estate operations on behalf of the State);

(b) Orientation of its real estate promotion activity on a priority basis towards the production of social housing (8,000 to 11,000 dinars), while opting for the "personalization" of housing at the request of the beneficiaries;

(c) Improvement of its internal capacity for project management with a view, inter alia, to better control of costs and production deadlines;

(d) Adoption of a campaign for liquidating unsold housing which is a heavy burden on its operational balance.

3. National Company for Social Housing Promotion (SPROLS)

The objective of SPROLS is to enable the greatest number of families of Tunisian wage-earners meeting the legal conditions to acquire housing that is decent, healthy and within their means. Since the time when it was set up and in accordance with its purpose, up to 1988 SPROLS had built 11,000 social dwellings intended for leasing.

Starting in March 1989, at the decision of the President of the Republic, SPROLS began its first operation involving the transfer of older dwellings to their tenants. Following the Presidential recommendations of June 1989 on the revitalization of SPROLS' programmes, the latter switched its direction. Its dwellings are no longer intended for rental but for direct sale. Starting from that date, the new programmes were financed by the Housing Bank and the Housing Promotion Fund for the Benefit of Wage-Earners (FOPROLOS). The terms for granting social housing are as follows:

- The applicant must not be the owner of another dwelling;
- The applicant's salary must not be more than double the maximum guaranteed wage (SMIG);
- The self-financing required is 10 per cent of the price for eligibility for FOPROLOS credit (repayment in 25 years and interest of 5 per cent).

4. Restructuring of the financial system

The principal measures concern:

- (a) Transformation of CNEL into the Housing Bank in April 1989, which made it possible to create new products;
- (b) Immediate funds for land, new and old dwellings, and renovation (the mortgages have reached 85.2 million dinars for 7,400 beneficiaries);
- (c) Easing of the FOPROLOS financial terms by raising the credit up to 90 per cent of the cost of the housing (repayable in 25 years at 5 per cent interest).

These changes have introduced improvements as reflected by an increase in FOPROLOS credits and mortgages. Nevertheless they have brought about by the same token a downtrend in the subscriptions to contractual housing loans, which is more constraining.

5. Legislation and regulation

On the legislative and regulatory level, the measures introduced concern:

- (a) Amendment of the law governing real estate promotion by granting more benefits to the housing programmes and social parcelling out and by introducing developer activity;
- (b) Simplification of the procedures for obtaining building permits and approval of building plots;
- (c) Revision of certain articles of the Town Planning Code and the law governing building permission so as to curb the system of clandestine parcelling out and irregular construction.

6. Control of costs

The measures proposed relate to the cost of land and the drop in the cost of construction.

- Encouragement of urban plot densification (the aim is to attain 40 dwellings/hectare);
- The carrying out in an area of a number of pilot housing operations using local materials and traditional building techniques by which to reduce the unit cost by at least 30 per cent with greater comfort. All these correctional measures are in process of application.

IV. CONCLUSION

The housing policy pursued in Tunisia since independence has managed to appreciably reduce the housing crisis to the extent that the number of dwellings now exceeds the number of households and the new dwelling construction rate per year and per inhabitant is 6 per 1,000, which is of the same order as for such European countries as France or Germany. If we refer to the requirements evaluated on the basis of the 1975 census results, which amounted to 56,800 dwellings per year, the production level of more than 40,000 dwellings per year during the Vth Plan and 50,000 dwellings per year during the VIth and VIIth Plans has practically reached the level of the requirements.

Despite these results there are still problems. The demand for serviced plots and social housing is still high, the production of buildable land falls short of the needs and we see illegal recourse to the parcelling out of urban land. Nevertheless the APH has promoted the densification of plots. It has also initiated the improvement of small plots, but there still production is insufficient. In parallel, an effort has been made to renovate existing housing under the Special Improvement Project. There are also regional imbalances since 8 dwellings/1,000 inhabitants/year are being built in the district of Tunis, while only 4 dwellings/1,000 inhabitants/year are under construction in the north-west and west-central regions.

Inadequate production to meet the needs encourages the proliferation of spontaneous or informal housing and this sector has risen from 25 per cent of construction as a whole during the VIth Plan to 35 per cent during the VIIth Plan. However, thanks to the surveys made in districts and the listing of electricity link-up, this informal housing is in a certain way already known and official.

Increase in the cost of construction is also a problem, but the promoters are carrying out a number of pilot housing operations for which they use building materials and techniques which have made it possible to reduce unit costs by at least 30 per cent.

To find a solution to these problems the role of the operators has been redefined. SNIT no longer has the monopoly of social housing construction. SPROLS, which at first built rental housing, has sold the dwellings which have been bought by their occupants and it only builds housing now for direct sale. But it should be noted that the Tunisian mentality prefers private property to rentals, which explains why the share of the rented sector in Tunisia is very small.

Finally, a key element in the Tunisian housing policy is the Housing Bank, set up in 1989, which provides private individuals with suitably adjusted financial schemes.

Thanks to all these factors, and more generally to the dynamic movement of the private sector and the constant readjustment of the structures and incentives and regulations available for use by the Government, the problem of housing has been satisfactorily resolved in Tunisia.